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A report providing a broad overview of problems and practices in the design of college housing facilities. Major topics include--(1) characteristics of student populations, (2) types of housing solutions, (3) environmental components and criteria, (4) planning methods, and (5) financing considerations. The discussion is centered around the needs of students and the role of housing in the educational environment. Specific material is included on housing for graduate and married students and faculty. Data is supplied for--(1) housing needs, (2) space requirements, and (3) building costs. A large number of examples are provided showing existing solutions, with photographs and floor plans. This document previously announced as ED 014 195. (MM)

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A REPORT FROM EDUCATIONAL FACILITIES LABORATORIES

# COLLEGE STUDENTS LIVE HERE

EF003549

# COLLEGE STUDENTS LIVE HERE

## *A Study of College Housing*

BY HAROLD C. RIKER

WITH FRANK G. LOPEZ

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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HAROLD C. RIKER

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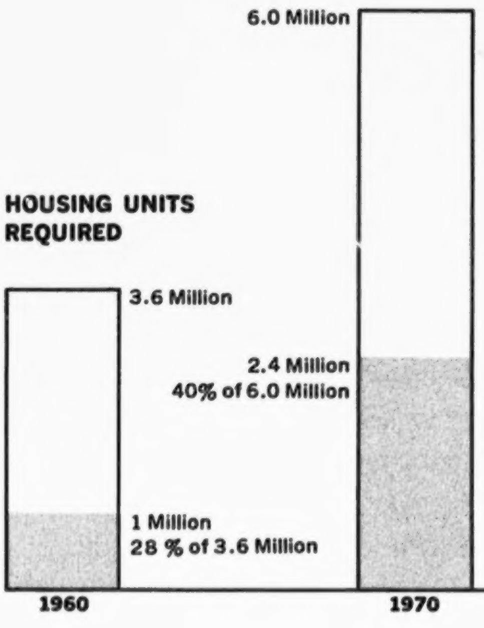
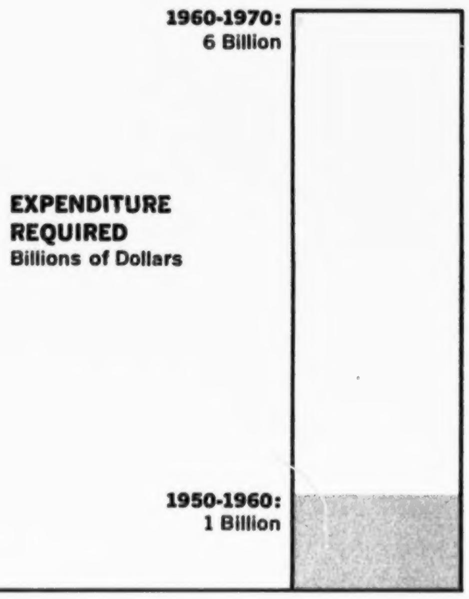
COLLEGE STUDENTS LIVE HERE
*A Study of College Housing*

# LOOKING FORWARD

THE MOST PRESSING PROBLEM of college housing is that there isn't enough. At the moment housing is available for roughly one-fourth of a college population of just under four million. By 1970, that population will have mushroomed to more than six million. And as much as 40 per cent of it will have to be housed on campus.





During the current decade, colleges and universities will have to add to their existing residential facilities about one and a half million new units — enough to house the combined populations of Boston and Cleveland. The bill for this added housing will run to at least $3 billion according to the most conservative estimate of cost and quantity. Present trends in construction costs and institutional policy make $4.5 billion a more realistic figure. A $6 billion price tag is entirely possible.

Students are already descending on our colleges in such swarms that, as one harried housing director put it, "We seem always to be taking two steps forward and three steps back" in meeting the demand for living space. The temptation is to simply throw up a roof over the students' heads and worry later about what is to go under the roof. Yet shelter alone is a dubious investment for educational institutions to spend $6 billion on.

Because more students must learn more, in more depth, than ever before, every resource the college can muster must be trained on the primary educational goal. Extensive and expensive housing facilities can no longer be viewed merely as a series of convenient pigeonholes in which students can be filed for the night. The very size of the building job to be done makes it essential for colleges to get their money's worth.

Happily, most colleges have every intention of doing just that. And the pace being set by some already suggests how they may go about it.

**Housing will certainly play a more vital role in the educational process.**

*Many colleges will explore the possibilities of conducting formal and informal instructional programs in their residence halls.*

The rise in the number of students, the proportionate decline in the number of qualified teachers, the shortage of instructional space, and the temper of the times are forcing changes in teaching methods, and focusing attention on housing as an untapped educational resource. New techniques for teaching large groups, for example, demand that large lecture classes be later broken down into smaller groups for detailed study and discussion. By holding these seminars and tutorials in the housing units, colleges can make maximum use of available common spaces and relieve the pressure on classroom buildings. Some colleges are even experimenting with formal classrooms in the residence halls.

*As the new electronic teaching devices come into wider use, they too will be included in housing units.*

Many of these devices—tape recorders, record players, radio, television, and some kinds of teaching machines—are inexpensive or portable enough to be made readily available in housing. Some are already being used successfully in residence halls, as at Stephens College, where lectures given over closed circuit television are viewed from the common rooms of the halls.

*In the next decade, the student room will take greater precedence over public spaces when plans are being drawn up and money dealt out.*

The study desk in the student's own room is still the most important educational facility housing can offer. If new housing is to reflect the growing emphasis on independent study, it must provide more efficient student offices, with larger desks, more adequate storage for books and other study materials, better lighting, and less distracting noise than has been the rule so far.

*Individual study spaces in the students' rooms will be supplemented by more common spaces earmarked for study.*

In addition to the rooms used for instructional programs of one kind or another, residence halls may contain group study rooms, often with carrels; typing rooms where students can work into the wee hours without calling down the wrath of sleepy roommates; and libraries ranging from reference branches of the main library to simple browsing corners stocked with general books and periodicals. Many of them can be set aside for different purposes at different hours. The study rooms may be used for meetings, the library for study, the meeting rooms for recreation.

*Other approaches to knitting together the student's in-class and out-of-class life will also be tried.*

More colleges are following the lead of the few schools who now draw the faculty into the student community by providing them with living quarters or offices in or near the residence halls, and by encouraging informal association between teacher and pupil. Many are making a conscious effort to minimize the difference between an education and job training by injecting into the living climate a hint of culture in the form of paintings and sculpture (often the work of the students themselves), readily available books and magazines, and well chosen recorded music. Michigan State goes so far as to sow paperbound books about its residence halls on the theory that students will walk away with them, and—hopefully—read them.

**Colleges will take a closer look at the physical structures used for housing.**

*Tomorrow's housing will be built with the recognition that students are people as well as figures on a chart of projected enrollments.*

Living quarters scaled to people, privacy without isolation, and secure relationships with a small group of intimates are basic human needs. Yet mass higher education and the mass housing that goes with it too often create an anti-intellectual atmosphere compounded of inhuman size, impersonality, and unavoidable neglect of individual students by the faculty, the housing staff—and even by each other.

The college can, if it chooses, create even within the large structures made necessary by the economics of building, small living groups in which each student can find a comfortable niche. Yet too many students live anonymously in rows of identical boxes strung along bleak, echoing corridors.

The coming decade will see smaller living units combined within larger structures. Housing projects on the whole will be self-contained, each with its own facilities for cultural activities, indoor and outdoor recreation, and dining. Common rooms will shrink in size and expand in number. The formal lobby and lounge will yield space to smaller, more casual rooms that can be used for study and discussion as well as for entertaining and recreation.

*In fact, adaptability will be a keynote of tomorrow's college housing.*

Already many colleges and universities are adopting coeducational housing designed so that sections of the project can be assigned to either men or women depending on demand, and common spaces can be used by both. Apartments are being built so that they can be assigned to unmarried as well as married students, and single student's housing units are being planned so that kitchenettes can easily be added if more apartments are needed for married students. Changes in the subdivision of the buildings themselves are being provided for by eliminating loadbearing walls and installing extra supply lines for utilities.

*Spurred by the need for more quality at less cost, designers will also explore new ways of getting more use from less space.*

Common areas that can be used for different purposes at different hours are one approach that has been tried. Split-level suites that cut down the amount of space eaten up by corridors and stairs—which often consume as much as 25 per cent of the total floor space in existing projects—are another. Several colleges are investigating the possibilities of wringing more revenue from their housing projects by planning student living quarters that can double as hotel facilities for conferences and meetings between academic sessions.

*At the same time, more attention will be paid to the effect of land use on the design of housing.*

As land gets scarcer and more expensive, more and more buildings are growing up instead of out. And this trend toward high-rise structures is visible not only at urban schools where it might be expected, but also on rural campuses where the time required for travel is putting the brakes on horizontal expansion. Some future skyscraper schools may enclose, in effect, a whole campus, with instructional and service spaces on the lower floors, housing on the upper floors.

Since it takes about the same amount of space to park a car as to house a student, colleges are trying to use available land more effectively by wresting it away from the automobile and giving it back to students. Unless cars are eliminated from the campus altogether—a notion incompatible with American mores today—parking facilities are needed near student residences. But many schools are attempting to cut down the amount of land they consume by stacking cars on top of one another in garages. The University of Washington provides underground parking beneath one of its high-rise residences.

The location of housing in relation to other campus buildings is also being studied more closely. Housing projects near existing food services may not need their own dining facilities. Units at some distance from the library may need more complete in-residence reference centers than units nearer to it.

*The new approaches to planning and design will inevitably lead to further experimentation with building materials, equipment, and methods.*

Such relatively new materials as aluminum, plastics, and thin shell concrete have already been used successfully. Brick, plastics, and other materials that need no finishing and cost little to maintain can serve attractively for partitions. Carpeting may prove to be no more expensive than other types of floor coverings over long periods of use, and will give the added advantage of muffling noise. Built-in furniture, which can be included in the construction contract and paid for with borrowed funds, may be less susceptible to damage than movable furniture, give an illusion of greater space in student rooms, and make possible savings on wall and floor finishes and on the cost of cleaning and maintenance. The higher initial cost for air conditioning may be offset by lower cleaning bills and more intensive building use, and by the potential advantage of freeing room arrangements from the restrictions imposed by the need for natural ventilation.

Contemporary building design is less expensive and more appropriate than machine-made copies of traditional building styles. Streamlined building procedures and prefabricated components—perhaps even whole rooms prepackaged for assembly at the site—can cut construction time and costs.

Even a small dose of imagination in planning and design can bring about marked improvements in college housing. And improvements are needed. If the expenditure of time, money, and effort that will be required to meet the demands of tomorrow's college population is to be justified, college housing will have to be better designed and constructed, better integrated into the academic community, and better administered.

# HOUSING FOR WHOM?

FIFTY GREAT SHORT STORIES

IF A GRADUATE of the class of '20 were to set out today on a tour of the housing at his old alma mater, he would be struck above all by its variety. The off-campus rooming house, the dormitory quadrangle, and fraternity row are still there—dressed in a different style, perhaps, but still recognizable. But the apartment village for married students is new. So is the center for graduate students. And so is the nearby subdivision where the faculty are building homes.

Yet alma mater's approach to housing has not really changed. Colleges are housing more people of more kinds, and they realize that a large and varied population demands extensive and varied facilities. But the unfamiliar new forms spring from an old familiar root. The starting point for college housing is still the needs of the people who will live there.

## THE TYPICAL STUDENT

Students naturally vary—in fact, some authorities feel that there is more diversity among students than colleges are prepared to accommodate—but they share enough traits to offer some clues to their housing needs.

There is, to take one very earthy example, the legendary appetite of the college student. If there is no snack bar, kitchenette, or at least vending machine convenient to his residence, he will leave the building to forage for food. He may keep an emergency supply in his room. His sister, more domestically inclined, will prepare her own snacks—surreptitiously if facilities are not provided, with accompanying unanticipated loads on the building's electrical system.

Students also need to stretch their muscles—including the vocal cords. A carry-over from adolescence, this need may become less important as the student grows older, but it does not entirely vanish during college years. At the same time, the student needs chances to recuperate after his exertions, mental as well as physical. A nap after a stiff quiz may be as vital to him as catching his breath after a game of touch football.

The moral for the programming and design of housing is clear:

Since physical activity can be expected, easily accessible places should be provided for it—game rooms, areas to practice dance steps, and outdoor space for more strenuous exercise. If these spaces are too remote from the students' rooms, or if not enough space is provided, more physical activity will take place in the rooms and halls, disrupting other functions.

It is more difficult to generalize about the social and mental characteristics and needs of the typical student, but there is enough evidence to make it possible to piece together a rough picture of him if we remember that no student is, in fact, typical.

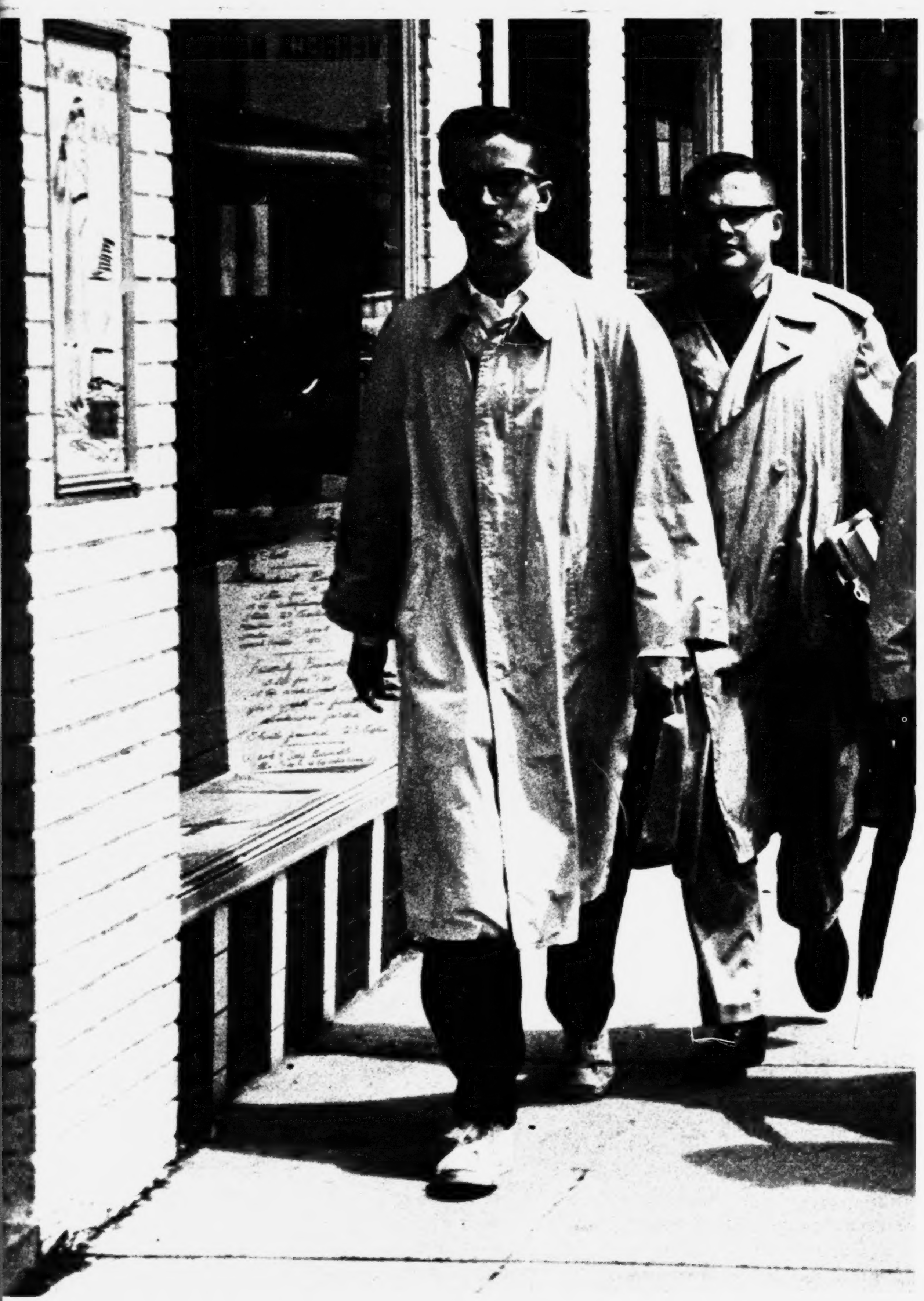
Today's entering college student is likely to be more experienced in many respects than his counterpart of 25 years ago. To begin with, the age spread within the student body is greater, which implies that many students are approaching maturity. Moreover, as the enrollment base continues to broaden, more and more students can be expected to come from families at the lower end of the income scale. The average student has been less sheltered.

During the decade 1950–60, much research has been done and many books and articles have been written on the nature of the college student and on the effects of the college environment on him. Several agree that most students are hardheaded and practical, rather cautious, and concerned with immediate material success: some call the majority self-centered to an alarming degree.

But students also have more positive characteristics. Most are interested in, and even enthusiastic about, at least some courses. They can hardly be called indifferent to academic achievement, or, for the most part, lacking in learning potential. Certainly this seems to be true of entering freshmen. Tests of general educational development have shown that high school seniors are performing at a significantly higher level than before. In 1959, for example, the average scholastic aptitude score for Harvard's class of 1963 was better than the score of 92 per cent of the class of 1935.

This rise does not, however, necessarily mean a renaissance of scholarship. The student is a product of a job-oriented society, so it is natural for him to look for programs and activities that will produce professional competence. He may think more of grades than of course content, assuming that a good transcript will be more useful than a fact in finding a job or being admitted to a graduate school. He is likely, in fact, to be already working part-time to help finance his education, or to be receiving help from some student aid program that requires him to maintain a high academic standing. The net result seems to be a more practical approach to college life. The student's greater seriousness of purpose leads him to participate in those activities that have direct value to him, but he casts a jaundiced eye at freshman beanies, pep rallies, and other "traditional" aspects of campus life, many of which he has already experienced in high school.

If another moral for housing can be drawn here, it is that housing should be designed and programmed to stimulate intellectual activity. This means providing proper educational facilities, developing workable plans for using them, and substituting sound social and academic leadership for conduct control.



## The Importance of Student Groups

Most students value a sense of independence, even when they are not ready for the greater responsibility which the greater freedom of college life entails. They are quick to rebel against activities and policies they regard as paternalistic or juvenile. But at the same time, their greatest concern is likely to be finding a niche in student society.

The younger student is particularly eager for acceptance in his new surroundings. In dress, speech, and behavior, he conforms to what he finds established: he brings a lot of clothes to college, finds many of them unacceptable, and takes pains to correct his uniform. During the first year or so, he changes rapidly in response to the shock of a complex new environment, and he continues to grow and change as he progresses through college life. It is part of the job of housing to smooth this transition from green freshman to sophisticated senior.

Housing's most important role in this regard is in determining the size and composition of the group in which the student finds himself, for the nature of the student's social group assumes great importance when he leaves home for college and begins to rely more on the opinions of his peers than on adult authority and guidance. Throughout his college years, this group is a potent force in shaping his thought and attitudes—a force often greater than that exerted by the faculty and equal to that exerted earlier by his family.

If the group is too large and too heterogeneous, the student remains lost in the mass until he seeks out a smaller number of cronies. (Some never do find a smaller niche and miss one of the most effective educational experiences the college can offer.) If the group is unwisely constituted or guided, it may influence him improperly, perhaps by concen-

OVERBECK BOOKSTORE
coffee shop
BROWN JUG

*"The student body as an entity may be thought to possess characteristic qualities of personality, ways of interacting socially, types of values and beliefs, and the like, which are passed on from one 'generation' of students to another . . . We contend, in fact, that this culture is the prime educational force at work in the College, for . . . assimilation into the student society is the foremost concern of most new students."*

Mervin B. Freedman, "The Passage Through College," *The Journal of Social Issues*, 1956

trating too heavily on material or social or athletic aims, or by inculcating the notion that a gentlemanly C is preferable to a scholarly A.

Because the living group can be so important to the student's development, colleges often make some attempt to guide the formation of groups. Many residence halls are internally subdivided into small units in order to retain both the social advantages of comprehensible group size and the efficiency of the larger organization.

How student groups should be composed is, of course, a topic for almost endless debate. Some administrators insist on housing freshmen and upperclassmen separately, arguing that the different interests and problems of students in different academic classes can best be handled through separated housing, and that separating the incoming class from others will minimize the transmission of poor attitudes and work habits.

Others vigorously reject this rather startling assumption that the college will do such a bad job with its students as to need a chance for a fresh start with each incoming class. They believe instead that freshmen and upperclassmen should be assigned in about equal proportions to all housing units, in order to assure continuity in the organizational life of the residence hall and to use the upperclassmen as steadying influences and informal advisers for freshmen. This procedure also permits greater flexibility in the assignment of rooms.

Another controversy revolves around the number of students to a room. Student rooms are usually double, although a few single rooms may be included in undergraduate housing to take care of students with personal or medical problems, and a greater proportion may be found in housing for graduate and advanced professional students. Placing three or more students in one room has also been tried, but the arguments against this—incompatibility of work-rest-recreation schedules, and social difficulties—are ordinarily strong. In addition, recent evidence indicates that students do more studying in their rooms when they have one roommate than when they have more than one, or none.

## HOUSING VARIED TYPES OF STUDENTS

In its broadest sense, college housing can be interpreted to mean any housing occupied by individuals associated with the institution, regardless of its ownership or its location on or off the campus. On this basis, college housing includes residence halls for single students; apartments for married students, faculty, and staff; houses or halls for fraternities and sororities, and for advanced professional or graduate students; cooperative houses; and even rooms in private homes.

This interpretation does not imply that the college must provide housing for all its groups, but it should be aware of their living situations and work with them to assure that their housing meets acceptable standards. The groups themselves and the housing available to them will differ from campus to campus.

### Housing Undergraduates

About two-thirds of all colleges, including junior colleges, have only an undergraduate enrollment, and as of 1957–58, 90.5 per cent of all students taking degree-credit work in residence were undergraduates. (Resident students are those who take their work on the campus rather than by extension or correspondence.)

Perhaps because they form the largest student group, single undergraduates are probably better accommodated than any other type of student. But their housing can certainly be improved, and there are some requirements for undergraduate residences that should be mentioned in addition to the general considerations discussed throughout this report. There are also subgroups who have special housing needs.

*Women* for example are becoming an ever larger minority of the campus population. By 1970, the ratio of men to women enrolled is expected to shift from 63:37 (in 1960) to 58:42, and the ratio of men to women housed from about 55:45 (1960) to 50:50. This implies that at least 5 per cent of existing and new housing will have to be studied with conversion from masculine to feminine occupancy in mind—and there is no indication that the trend toward more women students will stop in 1970.

Traditionally, housing units for women have provided more space per student than those for men. This may be due to a feeling that women demand—and even deserve—the luxury of more space, or due to the very real fact that women come to college with more belongings to be stowed away. A closet perfectly adequate for a man's clothes may be very cramped indeed when two bouffant evening dresses and three crinoline petticoats are hung in it. In addition, women need space for laundering, ironing, and sewing so that special spaces are often provided for these activities. Other auxiliary areas may also occupy more space because of the social tradition that expects the woman to spend more time in her home and to do some part of her entertaining there. Many residents will meet and entertain their dates in the hall, and girls without dates will need rooms for study and social activities away from the public areas. In any case, the differences in the housing requirements of men and women will have to be analyzed, and units planned to be adaptable enough to house either on demand.

*Freshmen*, who have represented between 22 and 26 per cent of total enrollment (including graduates) during the past 10 years, comprise another large subgroup. One of the principal characteristics of this group is its alarming drop-out record. According to a United States Office of Education survey, 27 per cent do not complete their first year and an additional 28 per cent leave during the next three years. Yet one-third of these drop-out students come from the top fifth of their high school graduating classes.

With these statistics in mind, it would seem fairly obvious that housing should be used to improve students' chances for academic success and to ease the transition from home to college. To this end, it should provide good study conditions, facilities for intellectual and cultural as well as social activities, and opportunities for informal association with faculty members. Advanced students need more study space and greater personal freedom, but this does not necessarily imply separate housing.

*Foreign students* are not yet present in great numbers on most United States campuses, but they have a disproportionate importance as interpreters of our political, economic and social institutions and as sources of future leadership in their own countries. Their numbers are increasing too. Some 48,000 foreign students, about half of them undergraduates, were enrolled in 1959–60; 57,000 are expected to enroll in 1961–62.

In most cases, foreign students need few special facilities, and few colleges and universities have housing units specifically designated for them. However, procedures in assigning them housing space do call for special attention, and special arrangements for food service are often necessary because of the variety of diets required by foreign students.

More than 20 international student centers are in operation in this country. Three large International Houses are located in New York, Chicago, and Berkeley, California. There are also smaller centers across the country, some sponsored chiefly by universities and some operated privately. The large houses were built for about 500 each on the assumption that this number permits a self-supporting housing operation. Many of the smaller centers have no housing accommodations but serve as local points for activities involving foreign students. Two essential features of any successful center or house are competent leadership and careful selection of the United States representation, which should be no less than 25, and preferably 50 per cent.

*Fraternity and sorority members* make up another large segment of the undergraduate student body. In 1960, the combined total membership of national fraternities and sororities was nearly 300,000 undergraduates, about half of whom lived in houses operated by the fraternal groups.

Since this represents about 15 per cent of the total undergraduate enrollment housed in that year, it is obvious that, at least from the financial standpoint, fraternities and sororities materially assist many colleges and universities in solving their housing problem. At an average of $4,400 per student space,* the replacement value of fraternal housing is over half a billion dollars.

At some colleges and universities, there are no fraternity groups at all. At others, the groups do not operate chapter houses, but instead rent or own meeting and social space in residence halls, student centers, or Panhellenic Houses. At still others, members are assigned to specially

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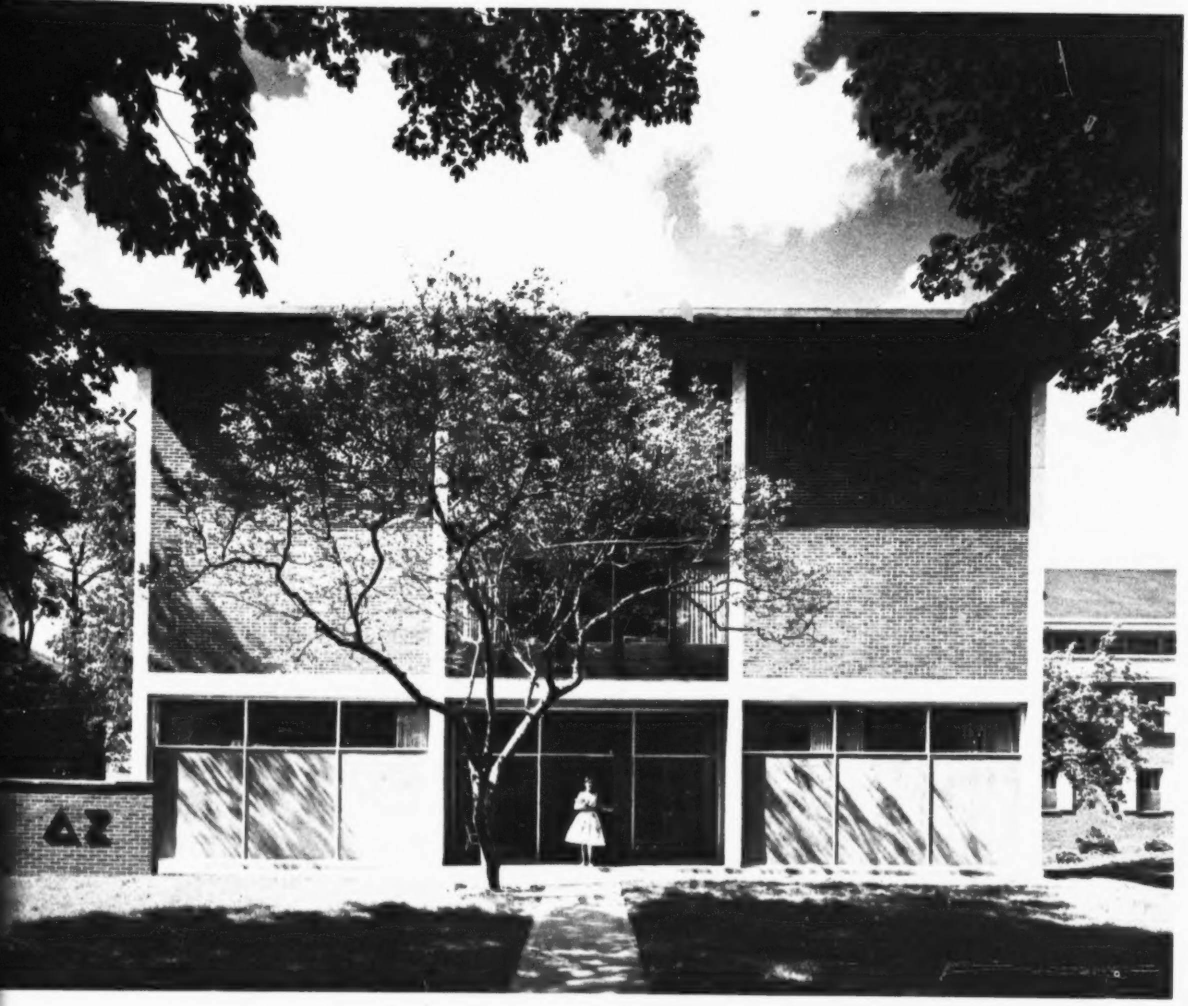
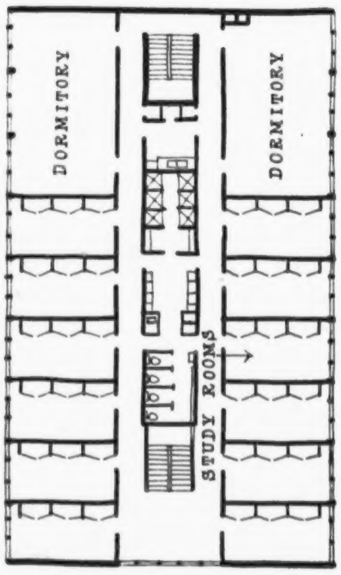
* 4,400 is the average cost per assignable space for 479 projects constructed or authorized through the College Housing Loan Program for the period 1955 to 1960.



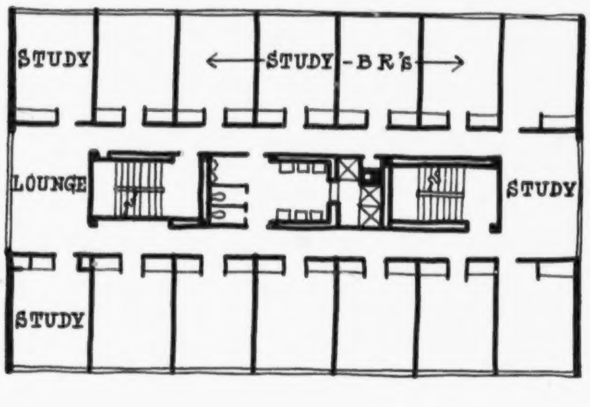


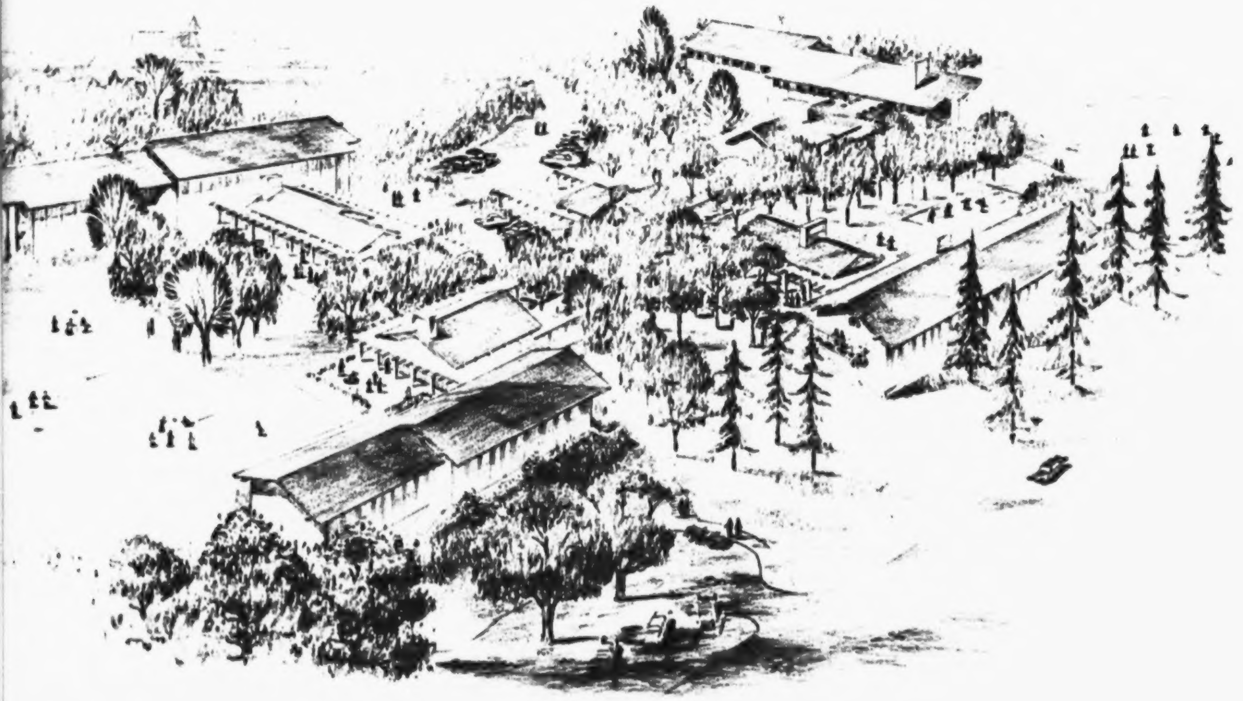
### Something Old, Something New

**Delta Zeta House, DePauw University.** *Though thoroughly contemporary, this sorority house follows the dormitory plan long traditional for such housing. In this case, however, the dormitories are supplemented by three-girl study-dressing rooms with closet, desk, chair—and some privacy—for each occupant*

### College-Built Fraternity Houses

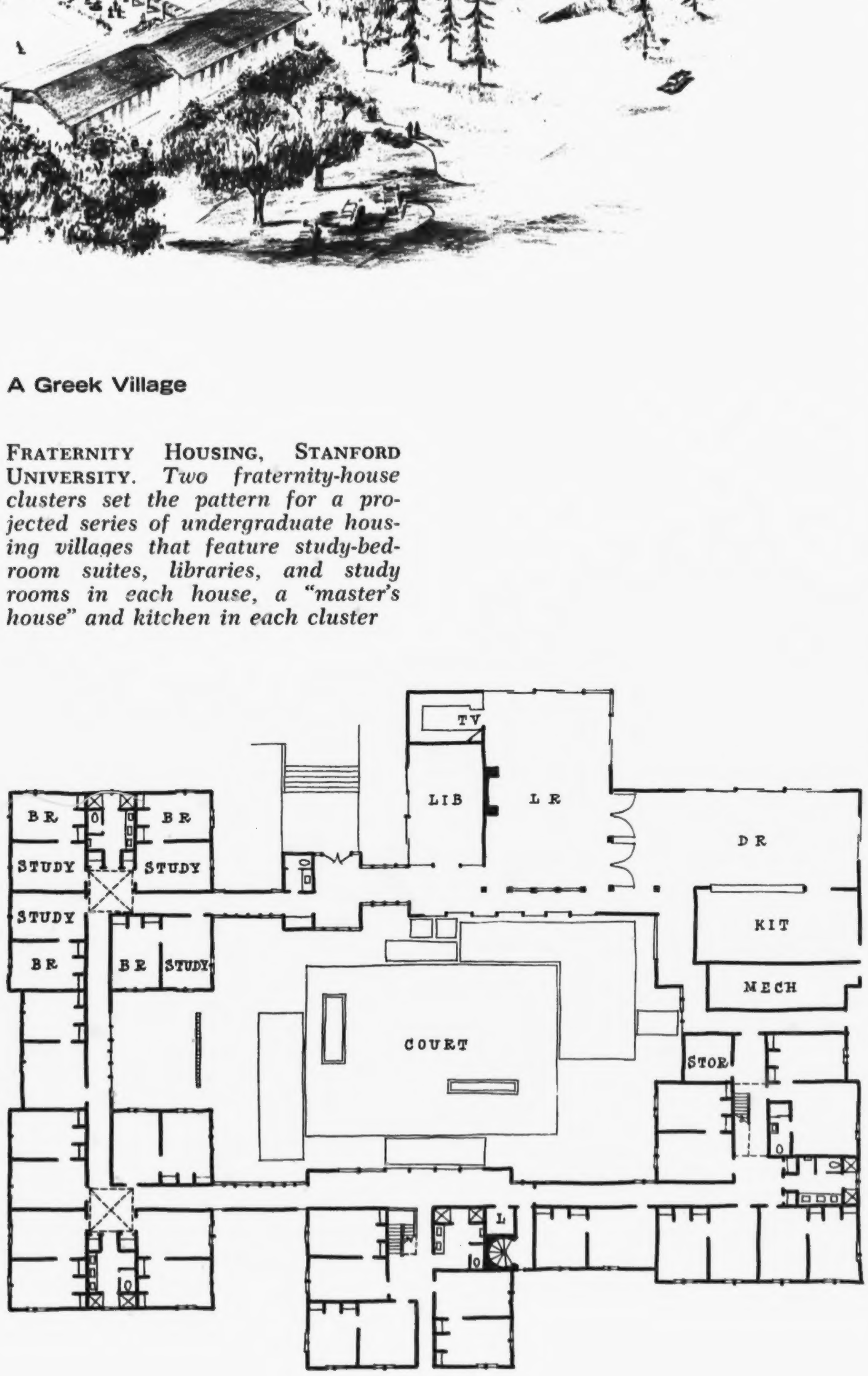
**Fraternity Housing, Illinois Institute of Technology.** *In a departure from the usual policy of private ownership of fraternity housing, IIT is building five small halls for lease by fraternities. Each will contain 24 double bedrooms and several study rooms on the two upper floors; kitchen, dining room, living room on the ground floor*





**A Greek Village**

FRATERNITY HOUSING, STANFORD UNIVERSITY. *Two fraternity-house clusters set the pattern for a projected series of undergraduate housing villages that feature study-bedroom suites, libraries, and study rooms in each house, a "master's house" and kitchen in each cluster*



designated sections of residence halls. The numbers of students involved vary according to the particular campus, ranging from none to more than 50 per cent of enrollment.

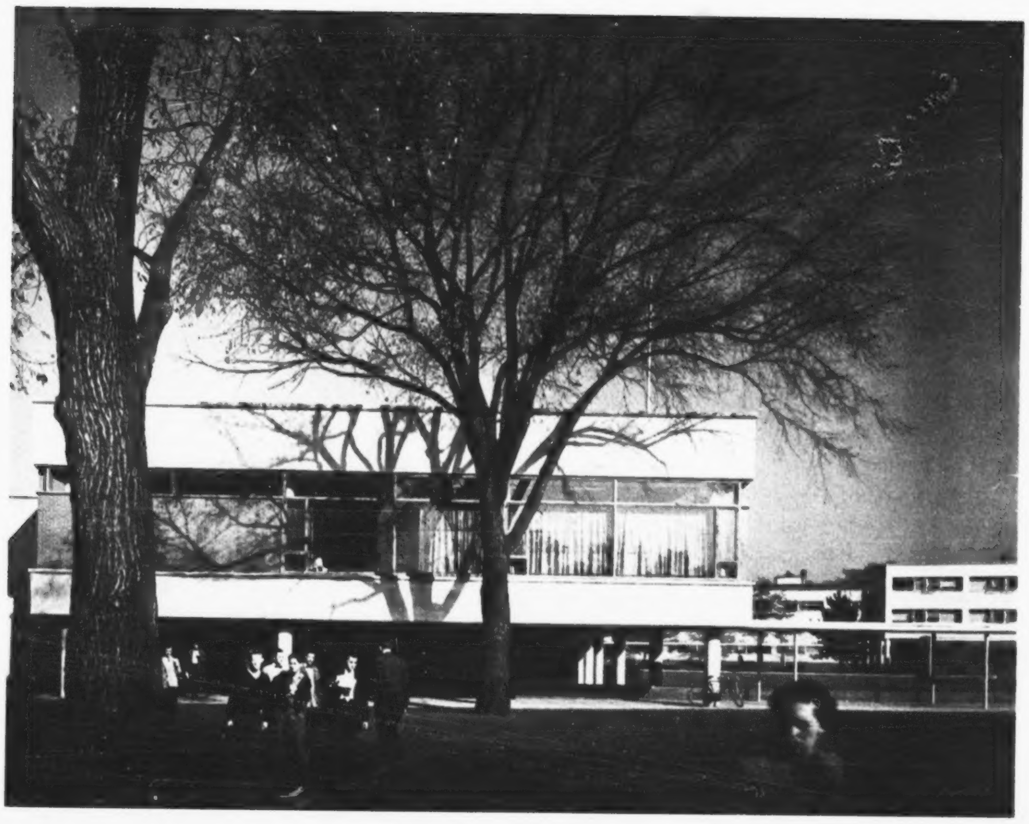
A great deal can be—and has been—said pro and con the subject of sororities and fraternities, but this much has direct bearing on housing: where an institution's policy definitely favors the fraternity system, it is logical to encourage these groups to assume some of the housing burden by giving them full administrative support. Currently, such support takes the form of financial assistance with new house construction, and in some cases, with such aspects of house management as room assignments and food purchasing.

### Housing Graduate Students

Graduate students accounted for only 9.5 per cent of all those taking degree-credit work in residence in 1957–58, but this relatively small number is increasing along with total enrollment. Within the next 10 years, more than 70,000 additional students are expected to earn their master's and doctor's degrees, a growth of about 84 per cent. And this estimate may be conservative in view of the pressures for graduate training.

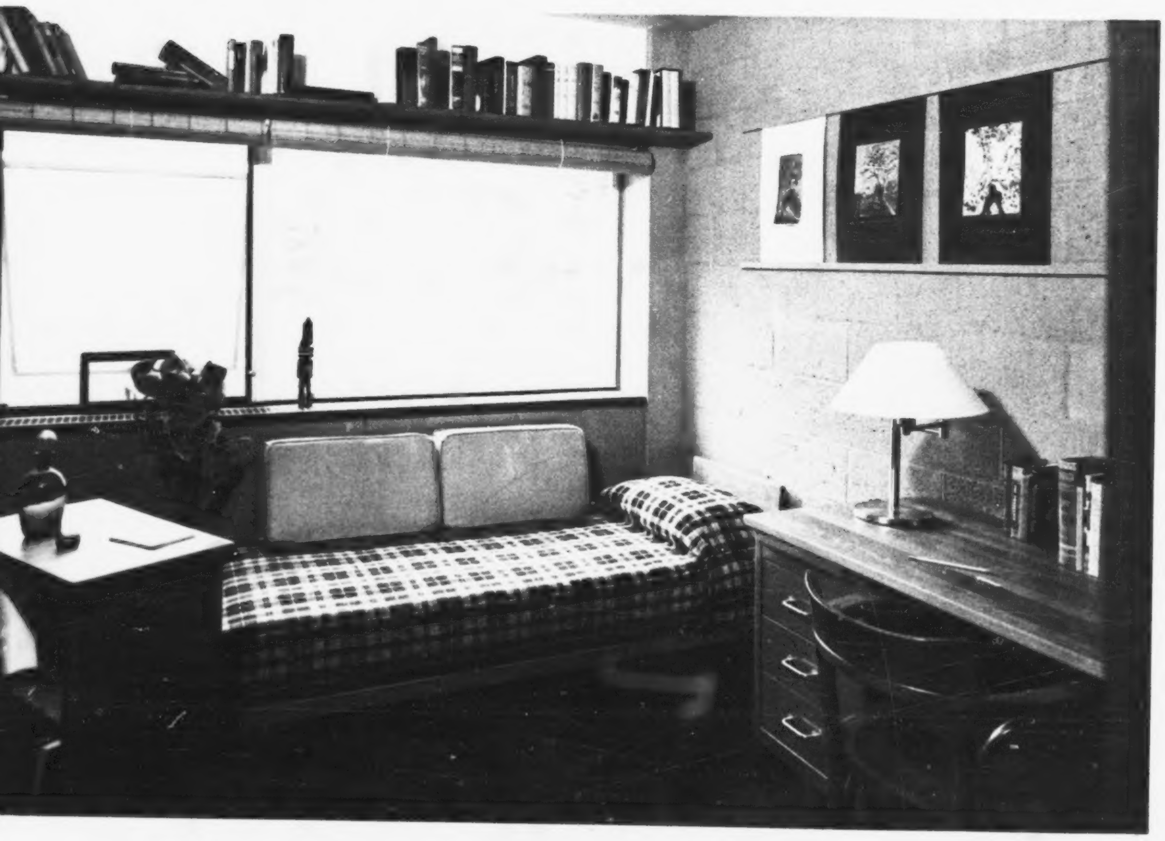
Industry and many professions are demanding more personnel with graduate degrees, and there are other incentives to continue graduate work, including private, state, and federal loan or scholarship programs such as the National Defense Student Loan Program. Many institutions are encouraging their more able students to apply for graduate training in order to help meet their own staff requirements for teaching and research projects. Some colleges are even competing for graduate students, using good housing facilities as additional bait for recruiting graduates and expanding graduate programs.

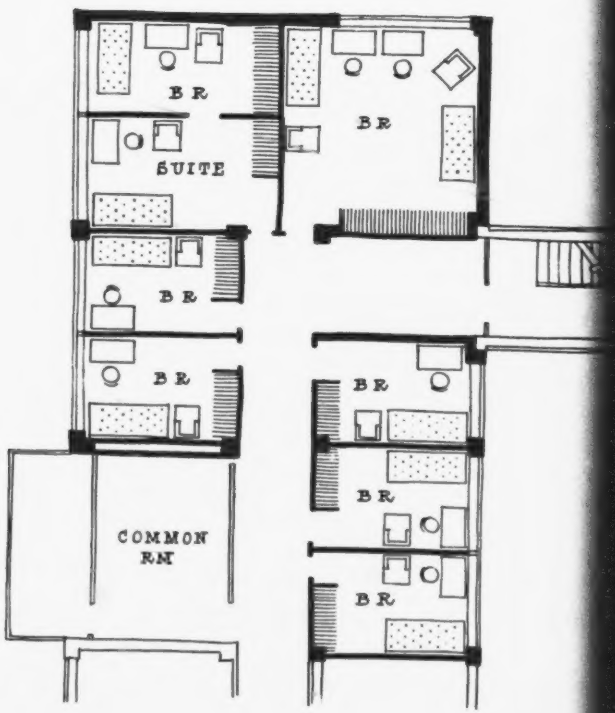
This growth in the numbers of



## A Graduate Village

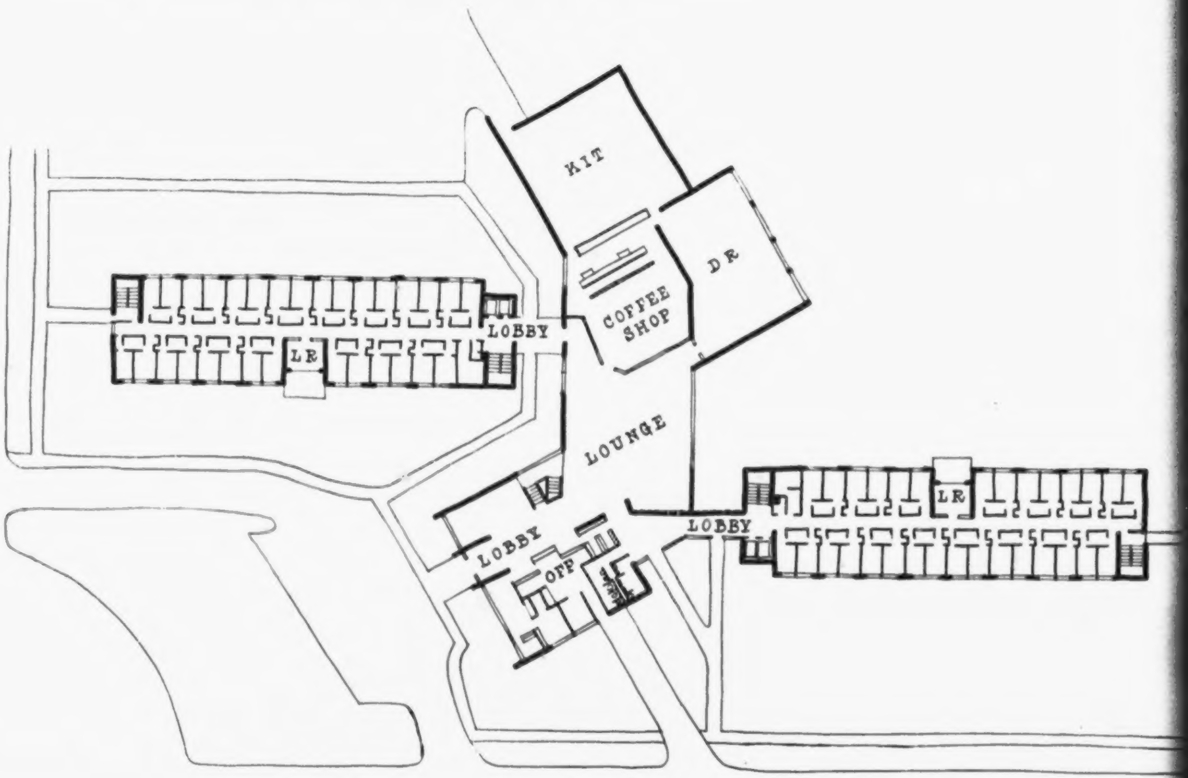
**Graduate Center, Harvard University.** *Seven low, sleek residence halls arranged in open-ended quadrangles that focus on a Commons Building form a community of single graduate students in law, arts and sciences. The Commons' lounges, dining hall and meeting rooms, and the policy of assigning student rooms without regard to specialty, encourage contact between students in different fields, while carefully planned student rooms (most of them single) provide privacy and study space*





## Coed Complex for Graduates

**Floyd E. Owens Graduate Residence Center, Michigan State University.** *Two 7-story wings, one for men and one for women, house 476 graduate students, most of them in single rooms. Pairs of rooms are connected by baths. The focal point of the Center is a single-story structure linking the two wings. It contains the main lobby and lounge, administrative offices, dining room and coffee shop. These joint facilities are supplemented by balconied living rooms on each student room floor*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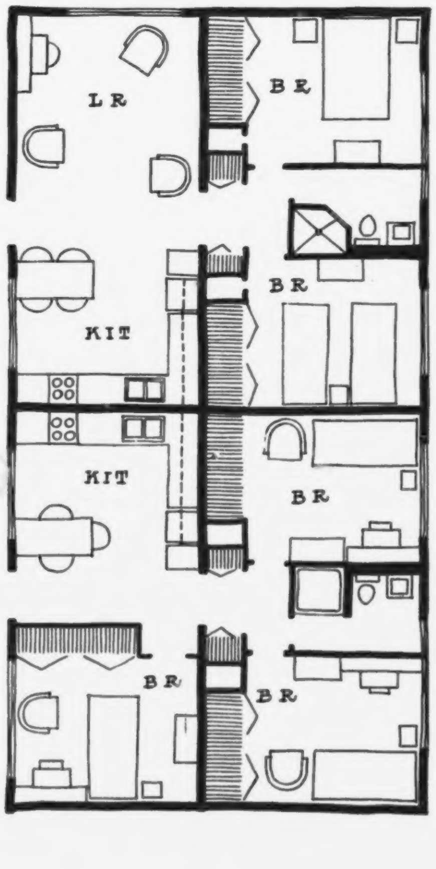
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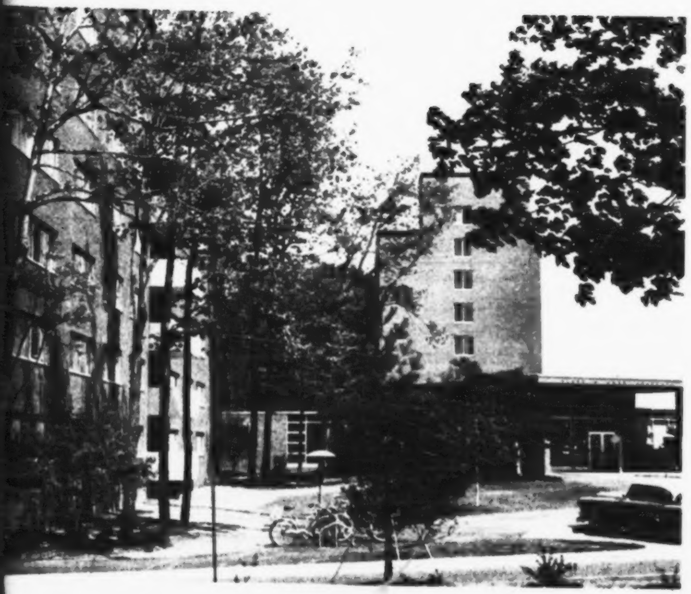


### Convertible Graduate Housing

**Graduate Residences, Claremont College.** *Single rooms and apartments in this group of five buildings house both married and single graduates. The floor plan shows how a two-bedroom apartment can be converted to a three-student suite*

graduate students to be housed, and the corresponding growth in the demand for graduate students, means that graduate housing must be both available and desirable.

This student group is older than the undergraduate group and more mature socially. Graduates are eager to move ahead with minimum interruption in their work. They do not accept many of the customary college conduct regulations and may as a result prefer to live more to themselves—off-campus if necessary. Their daily work schedules are more irregular, and residence may be on a year-round basis. Those who are graduate assistants may be more closely identified with the faculty than with the undergradute student body.

Obviously, graduate students have special housing needs. To begin with, at least half of them need apartments for families. From 40 to 60 per cent of all graduate students are married, and 40 per cent of those married have one or more children. The single graduates differ in their housing preferences. On one campus, the majority voted for apartments shared with one other student; on another, 80 per cent voted for single rooms.

Married or unmarried, graduates need more space and equipment for study than do undergraduates. In many cases, most of their work is done in their rooms, although in a few cases rooms are used only for sleeping. At the University of Florida, for example, medical students are assigned study carrels for doing all out-of-class work.

In establishing and maintaining graduate centers of whatever type, several other points should be considered. It is important not to isolate the graduate group from the rest of the campus. Living units should include common-use facilities that can lead to the development of a sense of community. At one university, graduate students recommended the following common facilities in order of usefulness: current periodical room, laundry room, snack bar, sundries store, indoor recreation, music room, outdoor recreation, club room, and lecture hall. Not mentioned in this instance, but important, are parking facilities (80 per cent of the group mentioned above owned cars) and food service facilities.

### Housing Married Students

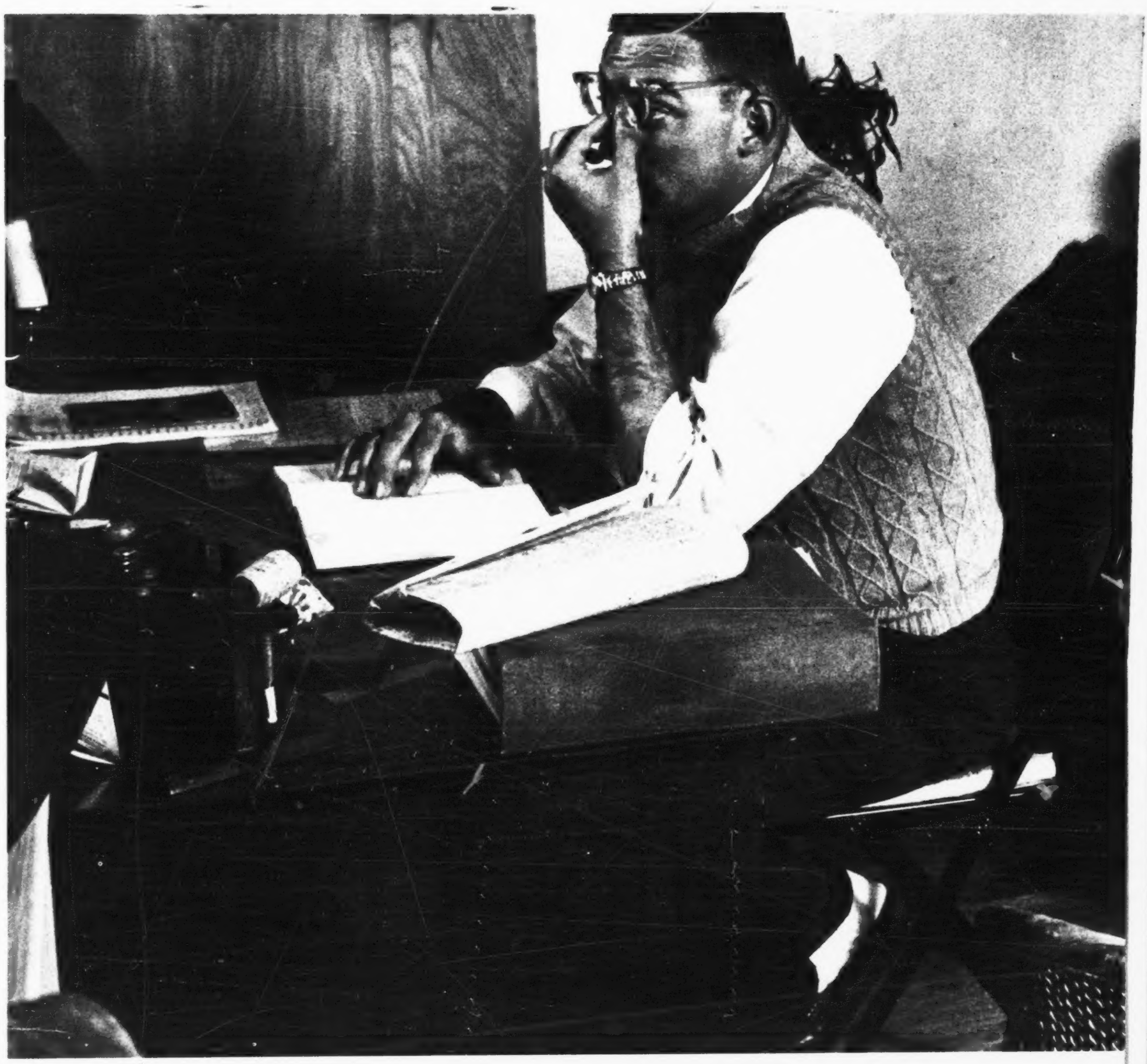
Married students are a post-World War II phenomenon that shows every sign of becoming a fixed fact of campus life. In 1960, about 24 per cent of the total college student population, or about 866,000 students, were married.

Their housing problem is relatively simple: they need apartments. How many are needed and what part of the need should be met, however, depends on policy as well as on cost.

Institutional policy ranges between two extremes. One view is that, for various social, academic, and financial reasons, no housing should be built for married undergraduate students. Often this viewpoint is accompanied by a corresponding reluctance to build housing for married graduate students.

The opposing point of view, that the institution has a responsibility for housing married as well as unmarried students, is also held by many colleges and universities, which have been encouraged by the academic success of married World War II veterans. The effect of marriage on the academic success of non-veterans cannot be easily estimated from this comparison, but the increasing numbers of married students are nevertheless considered a trend that must be faced and a housing problem that must be met.

Unfortunately for college pocketbooks, the housing required by married students is more elaborate and more costly than that for single stu-



dents. Sleeping and study facilities are not enough. An apartment must be an adequate home for a family, often including children. Minimum facilities consist of a living room, kitchenette, dining area, bath, one or more bedrooms, and storage space. Laundry equipment is also essential, but it is usually better located outside the apartment itself.

Depending on the distribution of family sizes at a given institution, about a 50:50 ratio of one and two bedroom apartments seems sensible. Efficiency apartments may be useful in limited numbers, but they often have the highest rate of turnover and vacancy. There are at least three objections to them. Such units do not provide enough space or privacy to permit a working wife to carry on her own activities while her husband studies. The arrival of a third member of the family creates a critical need for bedroom space. And bedrooms usually cost less per square foot than other areas.

Aside from the apartments themselves, a housing project for married students should have provision for trash and garbage disposal; sidewalks; area lighting; protected playgrounds for children; storage space for bulky family and community equipment; parking areas; regulated vehicular traffic; and reasonable proximity to schools and shopping facilities. In large projects, there may also be a manager's office, nursery, sundries store, outdoor recreation area, and community meeting rooms.

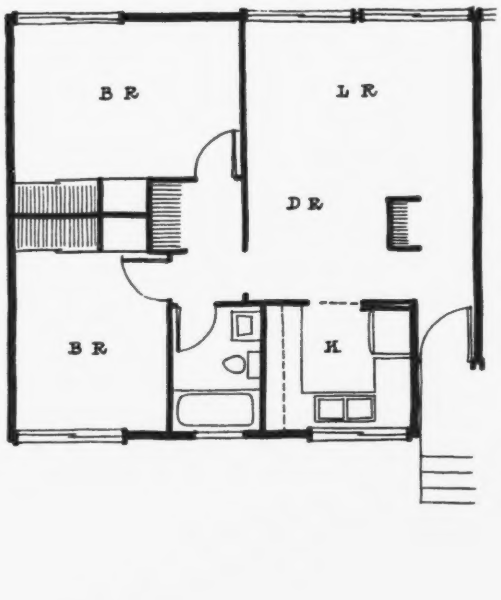
### Off-Campus Housing

Many schools now maintain full-time offices to work with the owners of off-campus housing in improving physical standards and operating procedures. Often a part of the campus housing organization, these offices are financed from housing income, general funds, and student fees. Usu-

*continued on page 28*

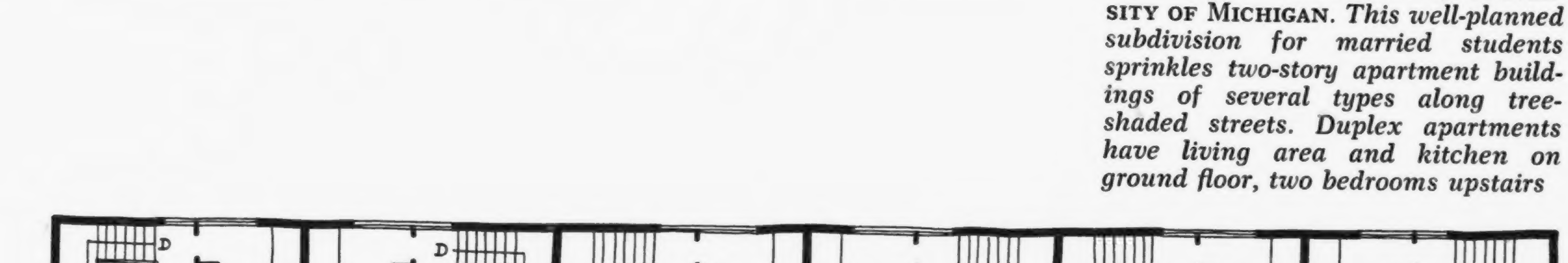
### Hillside Clusters for Couples

Married Students' Housing, Golden Gate Baptist Theological Seminary. *Married students' housing plays a major role on this brand new campus for theological students. Six buildings consisting of studio and one-bedroom apartments, and 24 buildings consisting of duplex and triplex apartments with two bedrooms, (see typical plan), are grouped into several hillside villages. Each village features a community green, with play yards for children and an adjacent central laundry*



## Duplex Row Houses

**Northwood Apartments, University of Michigan.** *This well-planned subdivision for married students sprinkles two-story apartment buildings of several types along tree-shaded streets. Duplex apartments have living area and kitchen on ground floor, two bedrooms upstairs*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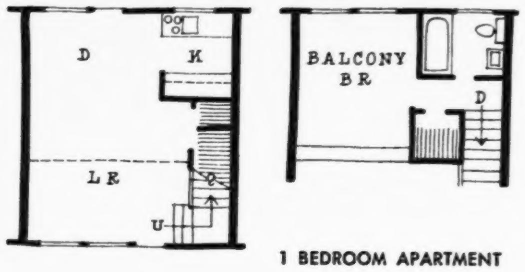
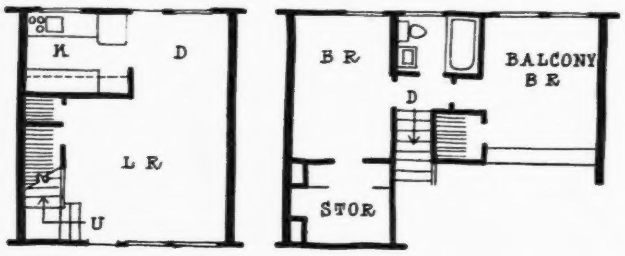
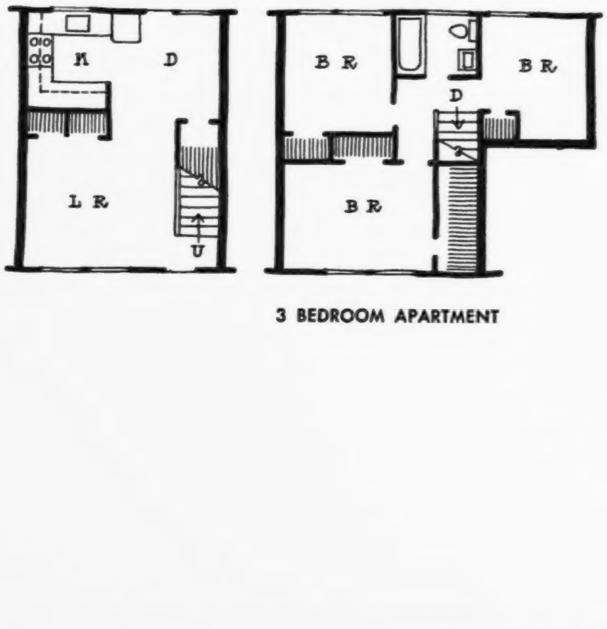


1 BEDROOM APARTMENT



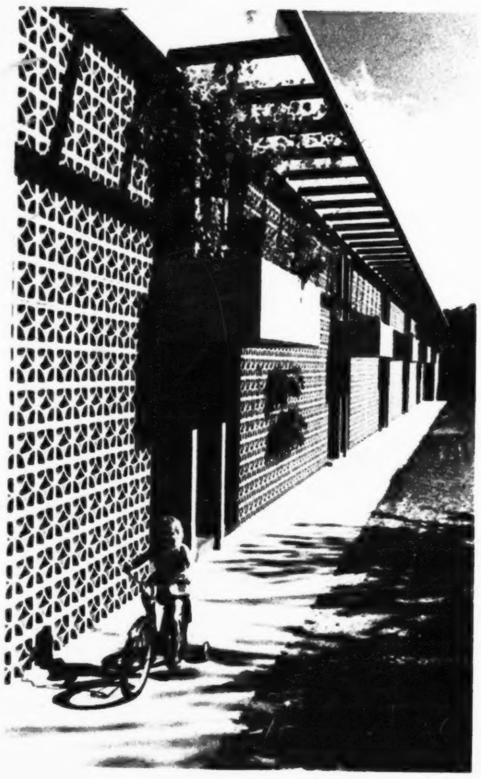
2 BEDROOM APARTMENT

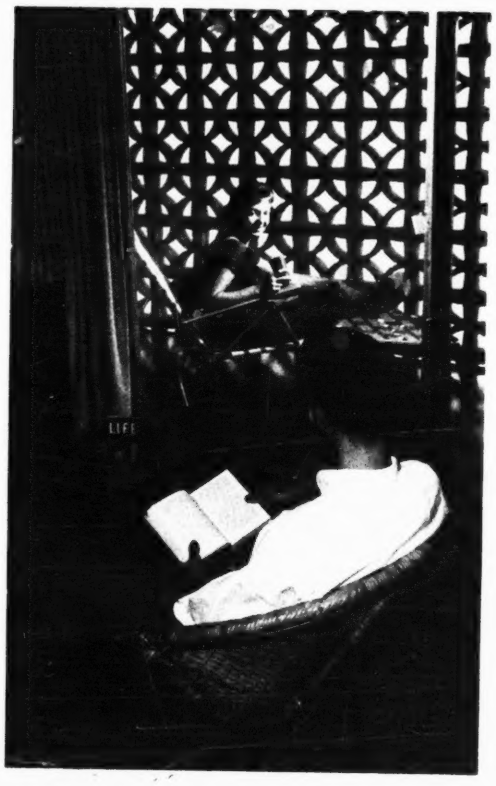


3 BEDROOM APARTMENT

## Wooded Apartment Village

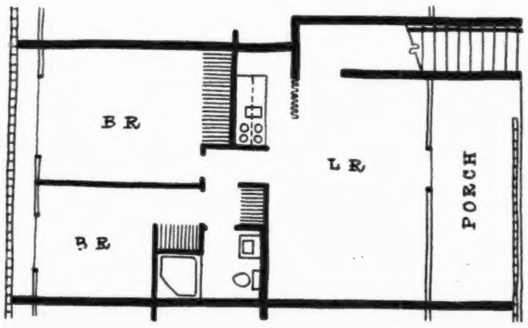
**Escondido Village, Stanford University.** *This residential development for married students consists of 54 one- and two-story, redwood-sided ranch-style buildings, each containing from four to six apartments. One-, two-, and three-bedroom apartments in seven basic styles, including two plans that feature a balcony-bedroom, provide a wide variety of accommodations. (Three of the typical plans are shown at right.) Eligibility for the various sizes of apartments is determined by the number of children in the family. Buildings are grouped in clusters of two or three, with common back yards fenced to provide protected home play areas for children*





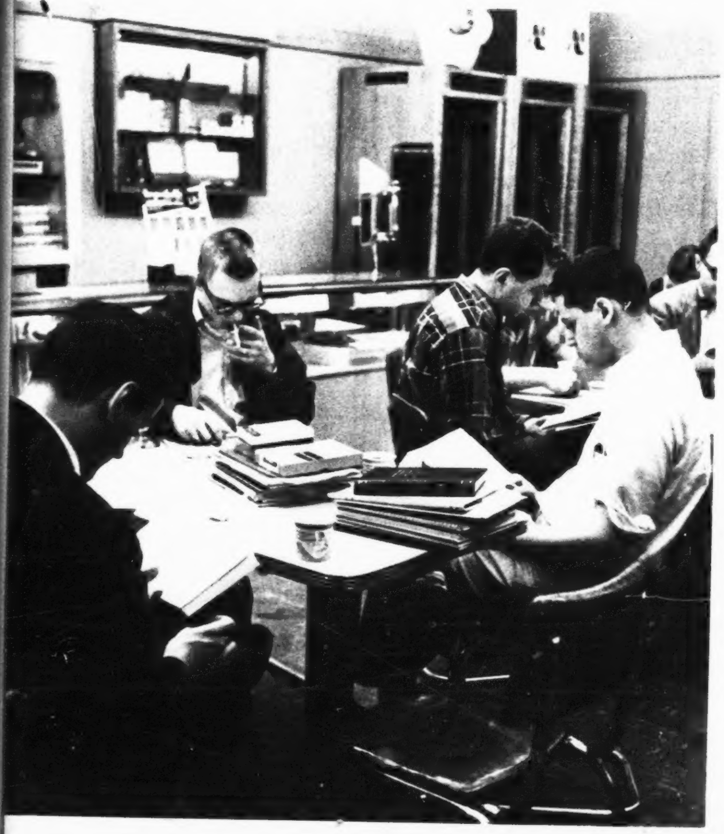
## Apartments Veiled for Privacy

MARRIED STUDENTS' APARTMENTS, UNIVERSITY OF ARKANSAS. *These long, low buildings arranged in open-ended quadrangles each contain 20 apartments on two floors. All apartments have two bedrooms, including a small one that can double as a study, and each features a 16-foot patio-porch that is separated from the living area by sliding glass doors. This extra outdoor living room is veiled by a tile screen that insures privacy as well as sun protection*



## The Community Core

HOOSIER COURTS NURSERY AND COMMUNITY BUILDING, INDIANA UNIVERSITY. *If a married students' housing project is to become a well-knit, functioning community, attention must be paid to common facilities as well as to the student apartments. One example is this project nursery, which doubles as a community center where the adult population of the project can hold meetings and social gatherings*



*". . . Certainly the heart of the matter is that the opportunities through activities in living together are just about as valuable as what goes on in the classrooms and laboratories. Rarely does a day student ever become a real part of the institution."*

J. Paul Slaybaugh, former President, Wesley College

ally, they provide referral service for house-hunting students and faculty, inspection of rental properties, and assistance in working with conduct problems.

Less frequently, such offices also try to develop programs intended to draw students who live off campus into campus life. These programs face such difficulties as student dispersion, inconveniently located meeting places, and insufficient staff. But the effort is worthwhile if even part of this large student group is given a better opportunity to share in the community life of the college. Some British civic universities approach the problem by assigning off-campus students as associate members of student residences. These associate members use the hall's dining and other facilities, and participate in its programs.

### HOUSING THE FACULTY

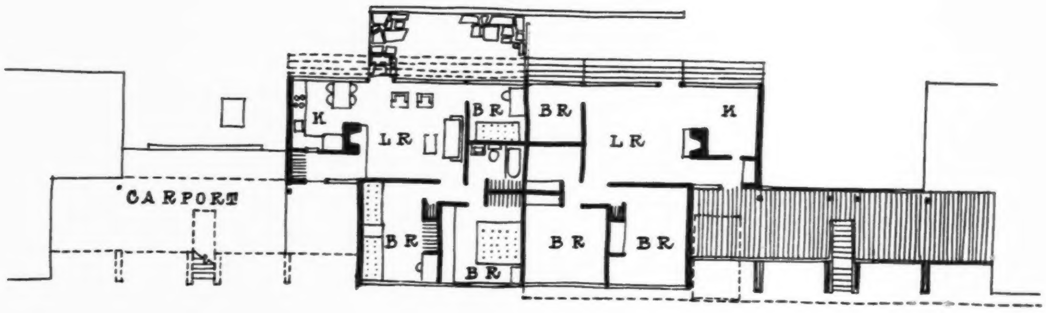
Traditionally most colleges and universities have had little concern for faculty housing; the local town has met the requirements. Even since 1950, in the face of more or less severe housing shortages over much of the country, only 43 institutions have applied through the College Housing Loan Program for funds to construct some 1,500 housing units for faculty members. About one-third of these are single rooms in faculty halls at church-controlled institutions, and most of the remainder are apartments, although some private schools emphasize separate houses.

In general, the faculty housing has been taken care of through individual rental or purchase in the local community, assignment to rental apartments or houses on campus, construction of housing projects, or development of off-campus home building sites for lease or purchase. It is always desirable to coordinate such plans for developing faculty housing with existing civic planning, and to cooperate when possible with local Chambers of Commerce or similar organizations, not only to conform to the plans of the community, but also because substantial aid may be forthcoming—as for instance when urban renewal projects are being formulated.

Whatever the procedure followed, colleges are likely to show increasing interest in faculty living facilities for a number of reasons:

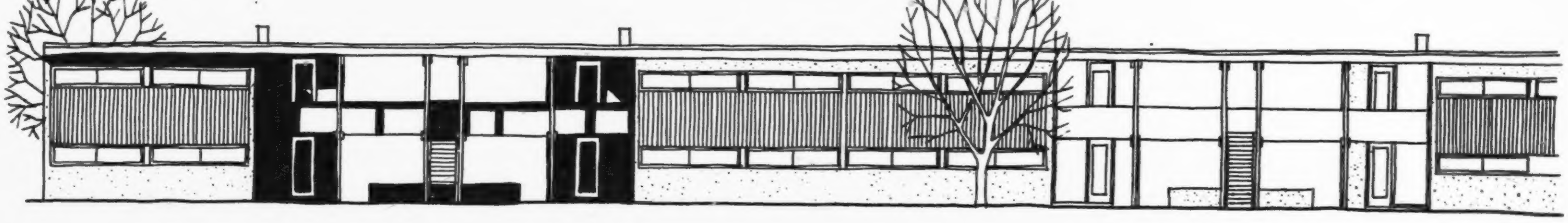
1. *Morale.* Inadequate housing is a chronic source of faculty dissatisfaction. Adequate, well-located housing on the other hand can strengthen faculty morale and help to develop a congenial college community.
2. *Local Situation.* In some communities, the college may be virtually forced to build living quarters for its faculty because of a critical housing shortage, deterioration of surrounding residential areas, excessive costs for housing, or local disinterest in building to absorb faculty expansion.
3. *Recruitment.* As employers, colleges are in a more favorable position when they can assure prospective staff members that good housing is available. Young faculty members particularly are interested in moderate cost rental housing for at least a limited time.
4. *Fringe Benefits.* Many colleges with low salary scales frankly admit that minimum housing costs serve as indirect, but acceptable, salary supplements. There can also be fringe benefits to the college. Spread all over town, the faculty can easily develop a "nine-to-five" attitude toward their work; living on or near the campus helps to bring them into closer contact with each other and with the total college community.

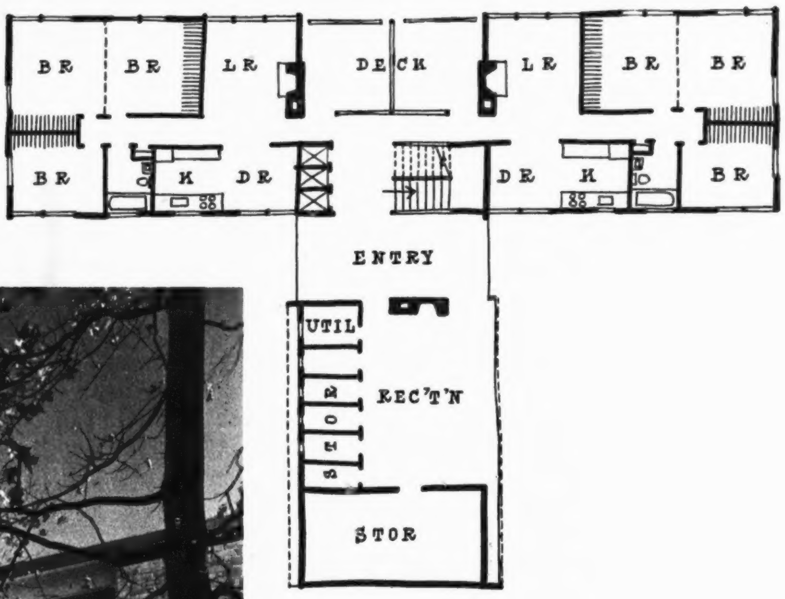
Where development of faculty housing becomes necessary, for whatever reasons, some rental units will undoubtedly be useful, especially as short-term accommodations. Facilities will be similar to those recommended for married students' apart-



## A Community of Scholars

**Housing, Institute for Advanced Study, Princeton.** *For its membership of distinguished scholars, the Institute has provided equally distinguished housing. Since members vary widely in age, and may be married or unmarried, with or without children, there are five basic types of units ranging from bachelor efficiency units to apartments with three bedrooms plus a study. (A two-bedroom plus study unit is shown at right.) All the apartments occupy a single level in one- and two-story row houses grouped to suggest a series of grassy courts that converge on the "village green." There is, however, no feeling of enclosure, since the courts are open at the corners, and the row houses themselves are broken at intervals by open carports*





### Apartments for Faculty Families

FACULTY APARTMENTS, DARTMOUTH COLLEGE. *With the help of eager advice from prospective tenants, these apartments were designed around the special needs of growing faculty families. All have three bedrooms, and are equipped with washer-driers. On the ground floor, there is a protected play area for children, with an outdoor fireplace and individual storage cubicles. For noise isolation, common walls were eliminated by arranging the apartments around a central entrance*

ments. (In some cases, they will even be in the same project.) There should, however, be more emphasis on housing for larger families. One-bedroom units are undesirable for faculty in about the same degree as efficiency units for married students.

In addition to or instead of rental units for faculty, some colleges and universities have provided home building sites for sale or lease, on the campus or on acquired land. These programs encouraging personal ownership have the decided advantage of giving teachers more satisfaction and a greater sense of permanence. Such programs have been successfully operated at several colleges for some years. A related possibility, especially for urban universities, is the development of cooperative apartment projects.

## HOW MUCH HOUSING?

Forecasting the amounts of housing needed for various types of students is complicated by the lack of available information on the numbers of each group who are presently enrolled and housed. The accompanying tables, however, represent some educated guesses as to the present situation and future possibilities for the country as a whole, and suggest a way in which individual institutions may determine how much housing will be needed for their particular kinds of students.

### Estimate: Kinds of Students and Their Housing Needs

The basic information for Table 1 was obtained from reports by the United States Office of Education, the American Council on Education, the Bureau of the Census, the Housing and Home Finance Agency, the National Interfraternity Conference, and the National Panhellenic Conference, as well as from replies to special surveys. In order to translate this data into the detailed breakdown shown

TABLE 1:

## ESTIMATE: KINDS OF STUDENTS AND THEIR HOUSING NEEDS

| | UNDERGRADUATE STUDENTS | | | | | | | | GRADUATE STUDENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Single | | | | | | | | Single | | |
| | Total Single & Married | Total Single | Men | Women | Coop Members | Fraternity Members | Sorority Members | Total Married | Total Single & Married | Total Single | Men | Women | Total Married |
| **1960: ENROLLMENT 3,610,000** | | | | | | | | | | | | | |
| Number Enrolled | 3,267,000 | 2,607,000 | 1,322,600 | 980,000 | 5,400 | 180,000 | 119,000 | 660,000 | 343,000 | 137,000 | 89,000 | 48,000 | 206,000 |
| Per Cent of Total Enrollment | 90.5 | 72.2 | 36.6 | 27.2 | .15 | 5.0 | 3.3 | 18.3 | 9.5 | 3.8 | 2.5 | 1.3 | 5.7 |
| Number Housed | 1,016,000 | 982,000 | 444,600 | 380,000 | 5,400 | 91,500 | 60,500 | 34,000 | 38,000 | 25,000 | 17,000 | 8,000 | 13,000 |
| Per Cent of Category Housed | 31.1 | 37.7 | 33.6 | 38.8 | 100.0 | 50.8 | 50.8 | 5.2 | 11.1 | 18.3 | 19.1 | 16.7 | 6.3 |
| **1970: ESTIMATED ENROLLMENT 6,006,000** | | | | | | | | | | | | | |
| Number Enrolled | 5,405,400 | 4,474,800 | 2,104,000 | 2,001,800 | 10,000 | 216,000 | 143,000 | 930,600 | 600,600 | 210,200 | 126,000 | 84,200 | 390,400 |
| Per Cent of Total Enrollment | 90.0 | 74.5 | 35.0 | 33.3 | .17 | 3.6 | 2.4 | 15.5 | 10.0 | 3.5 | 2.0 | 1.4 | 6.5 |
| Number Housed | 1,617,000 | 1,559,000 | 658,000 | 709,000 | 10,000 | 109,500 | 72,500 | 58,000 | 66,000 | 34,000 | 22,000 | 12,000 | 32,000 |
| Per Cent of Category Housed | 29.9 | 34.8 | 31.3 | 35.4 | 100.0 | 50.7 | 50.7 | 6.2 | 11.0 | 16.2 | 17.5 | 14.3 | 8.2 |
| **1970: HOUSING SPACE REQUIREMENTS** | | | | | | | | | | | | | |
| Space Available — 1960 | 1,016,000 | 982,000 | 444,600 | 380,000 | 5,400 | 91,500 | 60,500 | 34,000 | 38,000 | 25,000 | 17,000 | 8,000 | 13,000 |
| Normal Replacements 1960-70 (20 Per Cent) | 203,000 | 196,000 | 89,000 | 76,000 | 1,000 | 18,000 | 12,000 | 7,000 | 7,600 | 5,000 | 3,400 | 1,600 | 2,600 |
| Additional Space by 1970 (to provide for 25 Per Cent of Enrollment) | 601,000 | 577,000 | 213,400 | 329,000 | 4,600 | 18,000 | 12,000 | 24,000 | 28,000 | 9,000 | 5,000 | 4,000 | 19,000 |
| Total New Spaces 1970 | 804,000 | 773,000 | 302,400 | 405,000 | 5,600 | 36,000 | 24,000 | 31,000 | 35,600 | 14,000 | 8,400 | 5,600 | 21,600 |
| Per Cent Increase 1960-70 | 79.1 | 78.7 | 68.0 | 106.6 | 103.7 | 39.3 | 39.7 | 91.2 | 93.7 | 56.0 | 49.4 | 70.0 | 166.2 |

here, a number of assumptions were made, particularly in regard to the situation to be expected in 1970. Many of these assumptions will, of course, be subject to modification as new data is developed and refined, but in the meantime, they will serve as a general guide. The agencies and organizations who supplied the basic information are, however, in no way responsible for the use made of it.

*Undergraduate and Graduate Enrollments.* In September 1957, the last year for which reliable figures are available, 90.5 per cent of all degree-credit students in residence were undergraduates, and 9.5 per cent were graduate students. Since these percentages changed little during the period from 1953 to 1957, and excluded less than 5 per cent of the total number of enrolled students, the same percentages were applied to the total 1960 enrollment. The shift to 90 per cent and 10 per cent for 1970 is an educated guess based on the anticipated increase in numbers of graduate students.

### TABLE 1: SUMMARY

## ESTIMATE: KINDS OF STUDENTS AND THEIR HOUSING NEEDS

| | Total | % Total Enrollment | % of Increase | Single | % of Category | Married | % of Category |
|---|---|---|---|---|---|---|---|
| 1960: | | | | | | | |
| Enrollment | 3,610,000 | | | | | | |
| Undergraduate | 3,267,000 | 90.5 | | 2,607,000 | 79.8 | 660,000 | 20.2 |
| Graduate | 343,000 | 9.5 | | 137,000 | 40.0 | 206,000 | 60.0 |
| Single | 2,744,000 | 76.0 | | | | | |
| Married | 866,000 | 24.0 | | | | | |
| Number Housed* | 1,054,000 | 29.2 | | | | | |
| 1970: | | | | | | | |
| Enrollment | 6,006,000 | | 66.4 | | | | |
| Undergraduate | 5,405,400 | 90.0 | 65.4 | 4,474,800 | 82.8 | 930,600 | 17.2 |
| Graduate | 600,600 | 10.0 | 75.1 | 210,200 | 35.0 | 390,400 | 65.0 |
| Single | 4,685,000 | 78.0 | 70.7 | | | | |
| Married | 1,321,000 | 22.0 | 52.5 | | | | |
| Number Housed* | 1,683,000 | 28.00 | 59.7 | | | | |

**Including fraternity and sorority housing.*

## HOUSING REQUIREMENTS BASED ON 6,006,000 ENROLLMENT

| | College Owned | Fraternity-Sorority | Total |
|---|---|---|---|
| Normal Replacement | 180,600 | 30,000 | 210,600 |
| Additional Spaces | 599,000 | 30,000 | 629,000 |
| TOTAL | 779,600 | 60,000 | 839,600 |

*Married Students.* According to the Bureau of the Census, married students represented 24 per cent of the 1960 enrollment. For 1970, it was estimated that they will comprise about 22 per cent of enrollment, reflecting the assumption that the percentage will decrease, although numbers will certainly increase.The breakdown into undergraduate and graduate categories was derived from a survey suggesting that about 60 per cent of the graduates are married. This ratio is expected to shift to 65:35 in 1970, while the ratio of married to unmarried undergraduates remains relatively constant.

The estimate of 47,000 available housing spaces for married students in 1960 is based on information from American Council on Education publications, College Housing Loan applications, and a sample survey. During the next 10 years, this number is expected to almost double, but even the 1970 estimate of 90,000 may be quite conservative. Since about half of the existing apartments for married students are of temporary construction, replacement could substantially increase this estimate.

*Men and Women Students.* The overall distribution of men and women students in 1960 was based on the 63:37 ratio reported by the Office of Education. In determining the relative numbers of men and women within the various student groups, a ratio of 65:35 was used for the single graduate group and a ratio of 58:42

for single undergraduates. The numbers of men and women included under the married student category were estimated from the ratio of 78:22 indicated by Bureau of Census reports. A 70:30 ratio for coops was suggested by survey information.

By 1970, the over-all ratio of men to women is expected to shift to 58:42, reflecting a continued trend toward a higher proportion of women students. Since the relative numbers of men and women who are graduate students, married students, and coop members is expected to be about the same in 1970 as in 1960, this change in the over-all distribution shows up primarily in the 50:50 ratio of men to women in the single undergraduate group.

The 1960 distribution of available housing spaces on a 55:45 ratio of men to women is supported by publications of the Office of Education and the American Council on Education. The 1970 ratio of men to women housed is assumed to be 50:50.

*Fraternity and Sorority Membership* and housing spaces were separated from other enrollment and housing figures to emphasize both the need for college-owned housing and the contribution of fraternity housing, which is usually privately owned. It was assumed that the membership of fraternities and sororities, and the housing they provide, will both increase by about 20 per cent by 1970.

*Cooperative House Membership* was estimated from surveys. In the summary, coops are listed as college-owned, although some are privately owned.

*Normal Replacement Needs* were estimated at 2 per cent per year (20 per cent for ten years), on the assumption that buildings must be replaced about every 50 years. (See Office of Education, *College and University Facilities Survey, Part 2.*

**TABLE 2:**

### COLLEGE HOUSING SPACE REQUIREMENTS BASED ON PERCENTAGE OF ENROLLMENTS

| Year | Estimated Total Enrollment | Required Housing Spaces 25% of Enrollment | Approximate Additional Number Per Year | Required Housing Spaces 40% of Enrollment | Approximate Additional Number Per Year |
|---|---|---|---|---|---|
| 1960 | 3,610,000* | 902,000** | ........ | 1,444,000 | ...... |
| 1961 | 3,790,000 | 947,000 | 45,000 | 1,516,000 | 72,000 |
| 1962 | 4,004,000 | 1,001,000 | 54,000 | 1,602,000 | 86,000 |
| 1963 | 4,189,000 | 1,047,000 | 46,000 | 1,676,000 | 74,000 |
| 1964 | 4,372,000 | 1,093,000 | 46,000 | 1,749,000 | 73,000 |
| 1965 | 4,677,000 | 1,169,000 | 76,000 | 1,871,000 | 122,000 |
| 1966 | 5,006,000 | 1,251,000 | 82,000 | 2,002,000 | 131,000 |
| 1967 | 5,331,000 | 1,333,000 | 82,000 | 2,132,000 | 130,000 |
| 1968 | 5,617,000 | 1,404,000 | 71,000 | 2,247,000 | 115,000 |
| 1969 | 5,796,000 | 1,449,000 | 45,000 | 2,318,000 | 71,000 |
| 1970 | 6,006,000 | 1,501,000 | 52,000 | 2,402,000 | 84,000 |
| TOTAL | 6,006,000 | 1,501,000 | 599,000 | 2,402,000 | 958,000 |
|  | OR 7,000,000 | OR 1,750,000 | OR 848,000 | OR 2,800,000 | OR 1,356,000 |

**Actual.*

***Approximate number of spaces actually available. (Most fraternity-sorority housing is considered additional.)*

*Additional Space by 1970* was computed on the assumption that colleges will continue to house only 25 per cent of the total enrollment. It is likely, however, that the actual percentage housed will be closer to 40 per cent, and that considerably more space will therefore be required.

### Housing Space Requirements

The enrollment estimates in Table 2 were taken from data prepared by the United States Office of Education. That they may be low is indicated by the actual reported enrollment for September 1961, which was 2.7 per cent greater than estimated.

The alternate estimate of 7 million for 1970 reflects this possibility as well as such factors as the population bulge in the under-18 age group and surveys showing the high proportion of parents who expect to send their children to college. Note that the major housing requirements are expected to occur during the four-year period between 1965 and 1968.

# WHAT KIND OF HOUSING ?

**Table 1:**

**AREA ALLOCATION BY TYPE OF SPACE AND CAPACITY**

| Capacity of Residence Hall | 75 (Women) | 150 (Women) | 300 (Men-(Women) | 500 (Men) | 1,000 (Women) | 1,500 (Men) |
|---|---|---|---|---|---|---|
| 1. Study-Bedroom | 29.7% | 38.1% | 46.0% | 45.5% | 47.5% | 45.6% |
| 2. Toilets-Showers | 6.6 | 5.2 | 6.0 | 5.3 | 4.9 | 6.6 |
| 3. Corridors-Stairs | 20.9 | 17.5 | 19.0 | 24.6 | 23.6 | 18.2 |
| 4. Lounge-Recreation | 14.8 | 9.2 | 6.0 | 5.7 | 7.8 | 7.5 |
| 5. Service-Storage | 11.9 | 10.6 | 4.0 | 7.1 | 9.3 | 12.4 |
| 6. Dining-Kitchen | 11.5 | 13.3 | 15.0 | 11.3 | 5.9 | 7.9 |
| 7. Other | 4.6 | 6.1 | 4.0 | .5 | 1.0 | 1.8 |
| 8. Sum: Items 4,5,6,7 | (42.8) | (39.2) | (29.0) | (24.6) | (24.0) | (29.6) |
| | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Based on analysis of a limited number of projects selected as representing recent practice.*

**Table 2:**

**BUILDING SIZE VERSUS PHYSICAL CONDITION**

| Condition of Buildings | Public Institutions | | Private Institutions | |
|---|---|---|---|---|
| | Number | Mean Size | Number | Mean Size |
| Satisfactory | 164 | 44,250 sq. ft. | 181 | 24,602 sq. ft. |
| Poor *needs major rehabilitation* | 27 | 19,667 | 12 | 17,333 |
| Unsatisfactory *should be razed* | 27 | 14,259 | 18 | 14,889 |
| Total | 218 | | 211 | |
| Average | | 37,491 sq. ft. | | 23,384 sq. ft. |

*Source: United States Office of Education, College and University Facilities Survey, Part 3 (Preliminary Report), p. 9*

SINCE THE BASIC BUILDING BLOCK for college housing is the student room, one of the first steps in planning a residence hall is deciding how many of these building blocks there should be, and how they should be arranged in relation to one another and to the spaces the students use in common.

A concurrent step is to set broad standards for design—to determine what practical level of quality will produce housing that reinforces as well as reflects the prevailing character of the college, and reflects as well as molds the lives of its residents.

## SMALL BUILDINGS OR LARGE?

Two of the most desirable characteristics of housing—human scale and low cost—are often regarded as contradictory, but it is not necessarily true that small residence halls are the only guarantee of the first nor that large ones are necessary to achieve the second.

It is true, however, that, in the country as a whole, small housing units for about 100 students are the rule. This is partly because there are so many small colleges, and partly because administrators generally favor the smaller buildings in order to maintain what they consider to be a desirable staff-student ratio of about one to 100 or 150. Another factor is unfavorable experience with existing large buildings which are not adequately subdivided to provide for small-group living.

Superficially, the small building does seem to have advantages, among them a generally lower per square foot cost for initial construction. Yet recent investigations of building capacity in relation to efficiency, operating costs, land use, and travel time between buildings as campuses expand, tend to justify the discernible trend toward tall buildings with large capacities. High-rise residence halls are increasingly common at large colleges and universities, especially those in urban areas, and to some extent they may soon characterize most large campuses.

### High-Rise Housing

Any building 5 or more stories high may be considered high-rise, because stairs are unsatisfactory for vertical circulation in buildings of more than 4 stories. Above this height, elevators are needed, although in most cases it is difficult to justify their cost until the building reaches a height of 8 to 12 stories.

The current trend toward the use of high-rise and other large-capacity buildings is due not only to the factors in their favor but also to the limitations of small buildings. For example, common-use facilities must often be duplicated excessively when building capacities are small. Table 1 shows that for a 75-student residence hall, common-use spaces total over 40 per cent of gross floor area to 30 per cent for student rooms, but that this ratio becomes more favorable as capacity increases. Greater capacity thus makes it possible to include more common-use space (social, recreational, educational, and general cultural facilities as well as service areas) without unduly increasing square footage per student.

Moreover, as Table 2 indicates, small buildings are more likely to be in poor condition than are large buildings, primarily because they are apt to be less durably built. Since neither structural requirements nor fire safety ordinarily demand more than light framing, wood construction is common. In addition, such initial installations as heating and sewerage often cost too much per student, as do operation, maintenance, insurance, and staff supervision.

For the institution in a downtown urban location, high-rise buildings may be the only means of expanding housing without acquiring more land

**ALLOCATION OF CONSTRUCTION COST**

Figures indicate per cent of total construction cost allocated to various contract categories for two buildings of comparable size and quality at the same institution.

| CONVENTIONAL | | HIGH-RISE |
|---|---|---|
| 1.7% | General | 1.4% |
| 1.7% | Excavating & Grading | 0.85% |
| 25.5% | Structural Frame | 24% |
| 12% | Masonry & Stone (WP&DP) | 14% |
| 1.25% | Roofing & Sheet Metal | 1% |
| 1.75% | Misc. & Ornamental Iron | 3% |
| 4.35% | Carpentry & Millwork | 7.75% |
| 1.75% | Metal Doors & Frames | 0.82% |
| 4% | Windows, Glass, Glazing | 4.5% |
| 6% | Tile, Marble & Terrazzo | 4% |
| 2% | Lathing & Plaster | 5.5% |
| 0.75% | Acoustic Tile | 0.7% |
| 1% | Composition Flooring | 0.88% |
| 2.25% | Painting & Caulking | 1.9% |
| 1% | Finish Hardware | 1% |
| 1.5% | Elevators & Dumbwaiters | 5% |
| 22% | Mech. Equip. + Food Equip. | 16% |
| 8.5% | Electrical | 7% |
| 1% | Miscellaneous | 0.7% |

than the budget permits. On the spread-out campus, such buildings may be the most practical means of solving time and distance problems that complicate class changes and other traffic. And for some institutions, especially urban universities, the tall building may offer an opportunity to explore the possible advantages of providing some residential facilities on upper floors while assigning lower floors to instructional facilities that involve heavier traffic. For increased revenue, some schools are considering the use of lower floors in high-rise buildings for commercial enterprises or rental spaces.

Tall buildings do not, however, escape the problems inherent in increased capacity, such as more complex structural design, more intricate circulation patterns, increased traffic congestion, and greater difficulty in organizing coherent living groups. Elevators are also reported to be a frequent problem, although most elevator ills can be cured in short order by employing competent technical consultants—and following their recommendations.

Circulation efficiency, in particular, demands more study as buildings grow larger. Floor area for corridors and stairs, necessary though it is, cannot be considered productive space. Short corridors not only minimize problems of safety, maintenance, and noise control, and foster desirable room groupings, they also contribute to efficiency.

This is true of all buildings, but in a high-rise building where stairs and elevators consume much valuable floor area, corridors of minimum length become even more important. For the same reason, in a hall of any height, the size of lobbies and lounges should be kept to a reasonable minimum. Circulation areas should not, however, be cut to the very bone. For fire safety in any type of building, there should be two alternate

### The Short . . .

**Low-Rise Hall, Christian College.** *This small, ground-hugging hall gives the 160 girls who live in it a homelike atmosphere rare in college residences of any size. The substitution of exterior balconies and interior stair wells for through corridors, and the substitution of semi-private baths for the more usual gang arrangement (see plan over-page) add to an all-important sense of privacy, while living rooms and kitchenettes on the building's entrance floor provide a natural social center. Spacious, uncluttered rooms that indulge the feminine penchant for rearranging furniture are especially notable for an abundance of storage (2-foot dressers, 5-foot wardrobes) and for well-lighted study space. The construction cost of $3,975 per student included built-in furniture*

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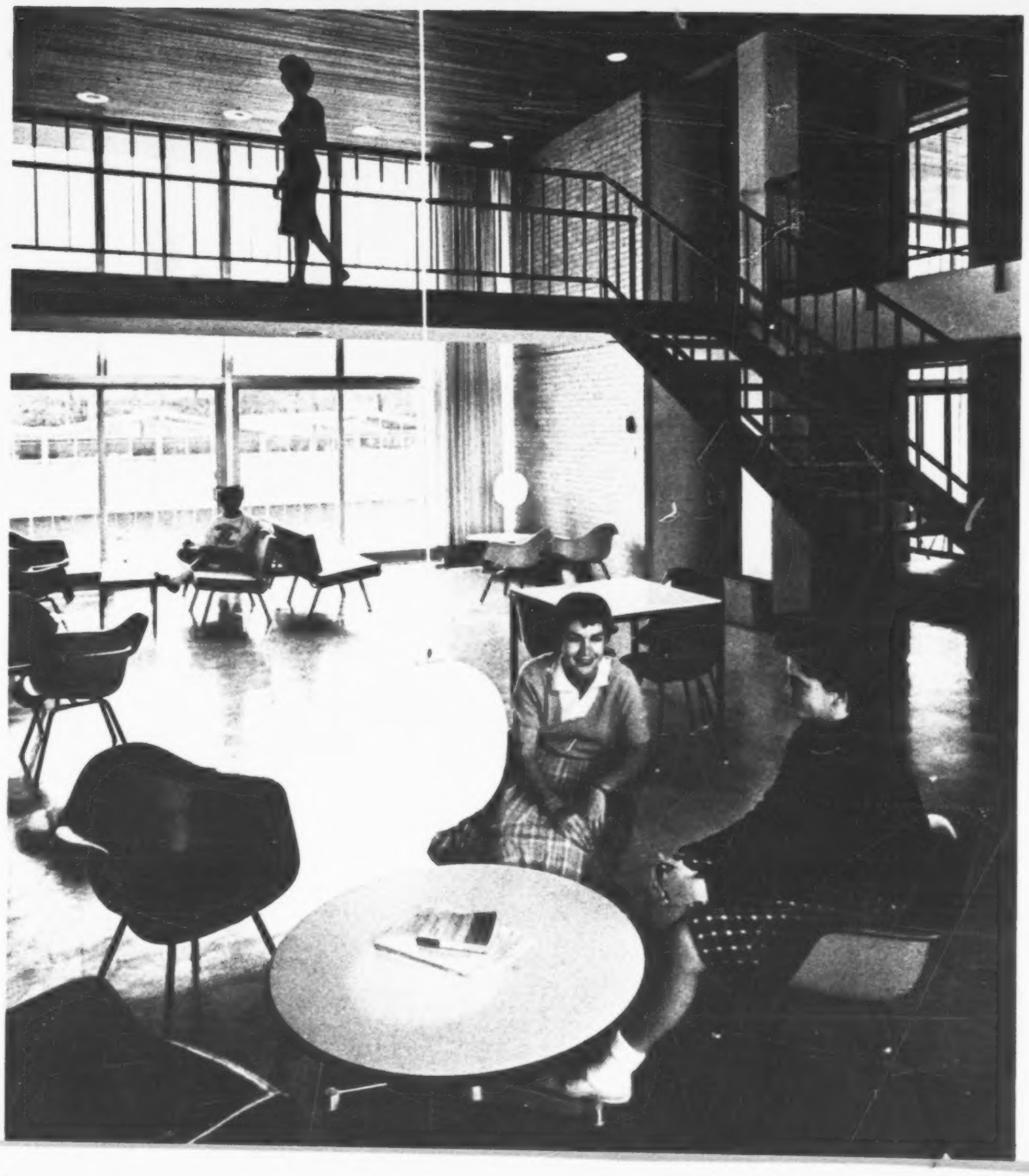
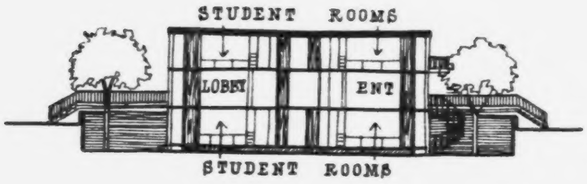
### . . . and the Tall

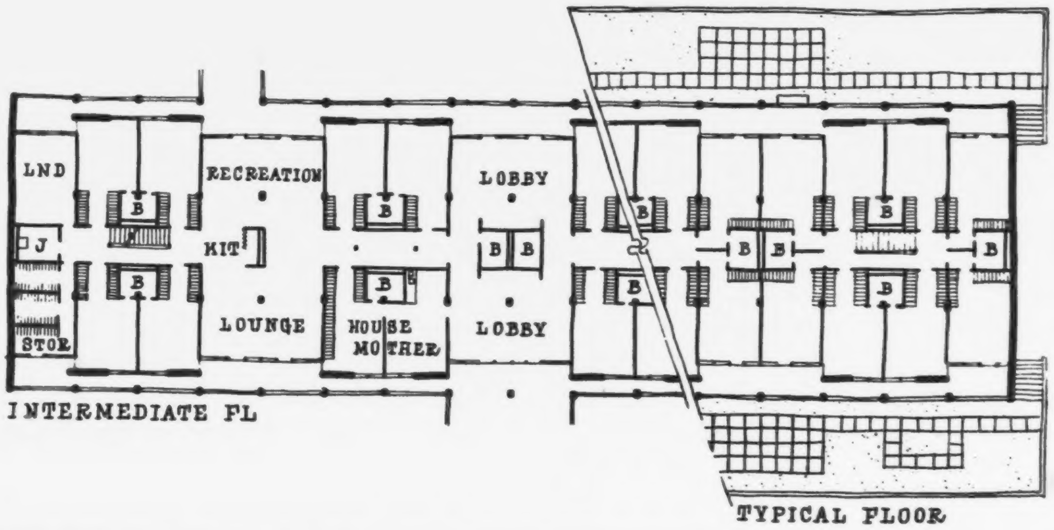
**High-Rise Hall, University of Missouri.** *In the same town, only a few miles away, 1056 of the University of Missouri's women students enjoy a similar degree of amenity in nine-story residence towers designed by the same architectural firm. The three towers, which are grouped around a central cafeteria, each house 352 girls. But this large student population is broken down into more manageable 88-girl groups by slicing the buildings into two-story layers, or houses, which are in turn split vertically by airy, glass-enclosed, two-story lounges (right). The resulting room clusters, two to a floor, are grouped about a utility core—bath, utility room, ironing room, elevators, and fire stairs. Construction cost, excluding food service, was about $3,350 per student*



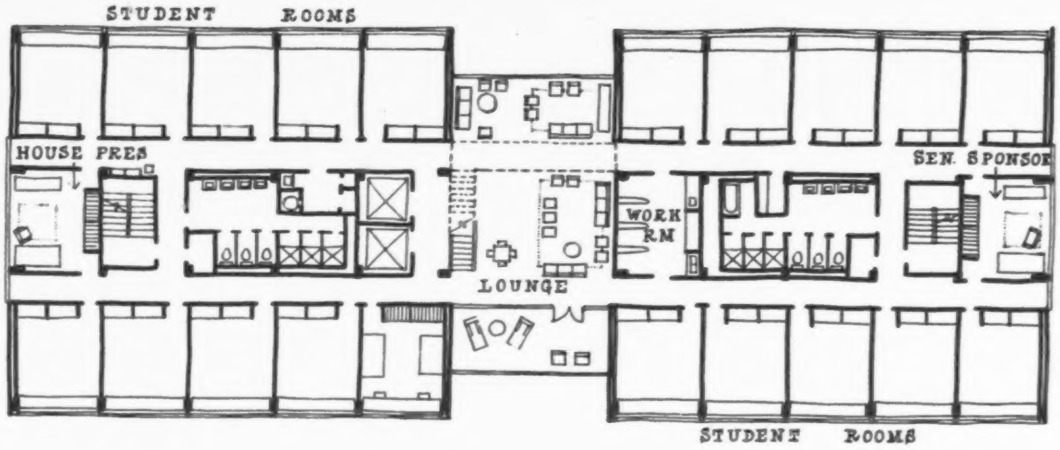


**The Short** (*continued*)...

*The hall's domestic scale is illusory. Actually three stories high, the building rises from a sunken courtyard that provides gardens in lieu of balconies for first floor rooms and cuts the hall's apparent height to two stories. Common spaces are on the middle (entrance) floor, with student room floors above and below*



... **and the Tall** (*continued*)



*Utility islands in each wing minimize corridor length and reduce noise transfer. Closets ranged along corridor walls also buffer sound. Student rooms on the upper floor of each 2-story house are connected by a bridge across the lounge*

safe routes of escape from all occupied areas, and more generous circulation areas add amenity while cutting down on noise.

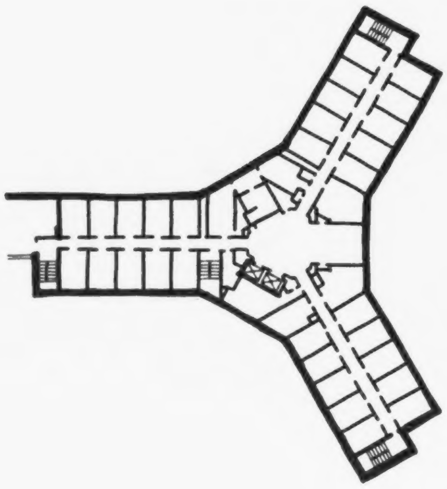
As to construction costs, the limited data available shows little difference between low and high-rise residence halls in a given locality. Of two men's halls built at about the same time in the same geographic area, a 4-story hall cost $90 more per student than an 11-story building. On the other hand, the cost per student of two women's halls built under similar conditions was about $70 more for an 8-story building than for a 4-story building. It is difficult, however, to isolate for comparison such elements of a high-rise building as foundations, structure, utilities, mechanical systems, and elevators.

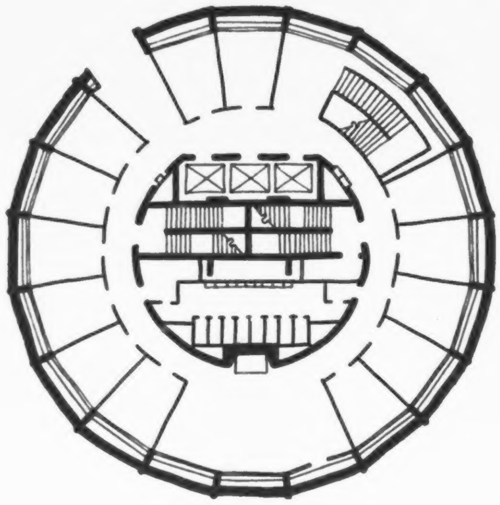
## ARRANGING THE SPACES

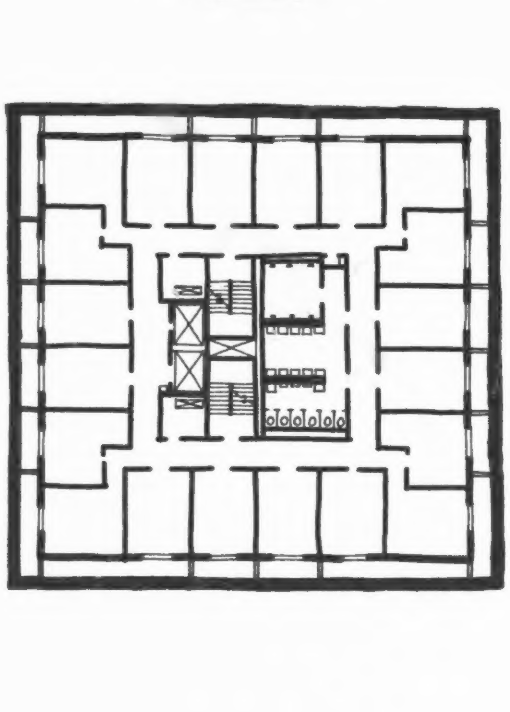
*Types of Floor Plans.* Most of the many possible plan shapes for residence halls are based on the principle that a short rectangle is most economical because it reduces the length of exterior walls, and hence the cost of the walls themselves and the amount of heat loss through them. The traditional pattern is an open or closed quadrangle, but wings arranged in "T", "H", or "X" plans are also common. All of these arrangements may increase the problem of exterior noise, and long wings usually have the added disadvantage of long corridors. However, wing plans make it possible to place common-use and service facilities at the crossing or core of the wings, sometimes in a separate central service core linked to the bedroom wings by covered or enclosed passages. This kind of plan separates units with different structural requirements, isolates noise sources from study and sleeping areas, and provides an opportunity to vary architectural treatment.

Carrying the core principle to its

## FLOOR PLANS FROM A TO Z







logical conclusion, several colleges have explored the possibility of circular plans with service and common-use areas in the center and student rooms along the periphery so that every student has an outside room isolated from noise sources, and space for circulation is cut to a minimum.

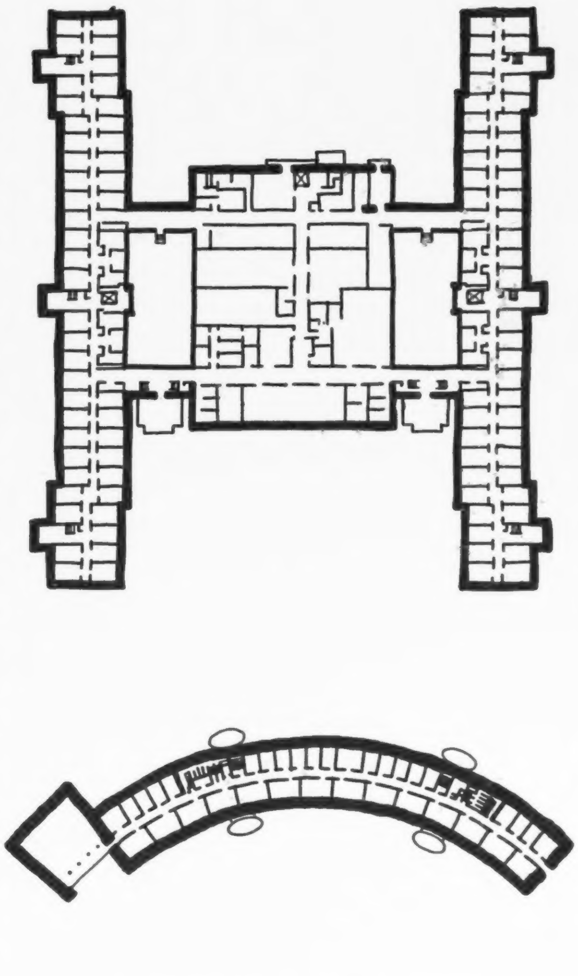
From the point of view of economy, it may be practical to plan common-use facilities so that they can serve several purposes. Their location should be related to the flow of student traffic. Exterior and interior common-use spaces should be readily accessible from student rooms without creating noise or otherwise interfering with the use of other facilities.

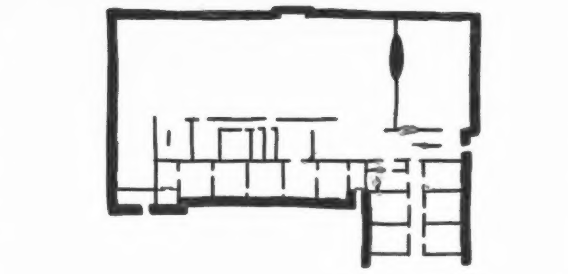
*Forming Student Groups.* One of the objectives of college housing is the formation of effective student communities. From the college's point of view, properly constituted social groups can aid individual adjustment, provide training in getting along with others, and exert a desirable influence on behavior.

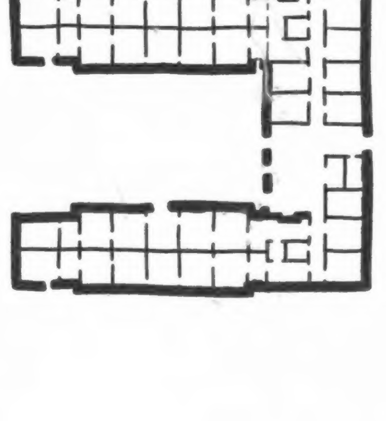
Unfortunately, the factors that contribute to the development of student groups are largely a matter of speculation, although physical proximity and frequency of contact within normal traffic patterns certainly help to determine which students are likely to share common activities.

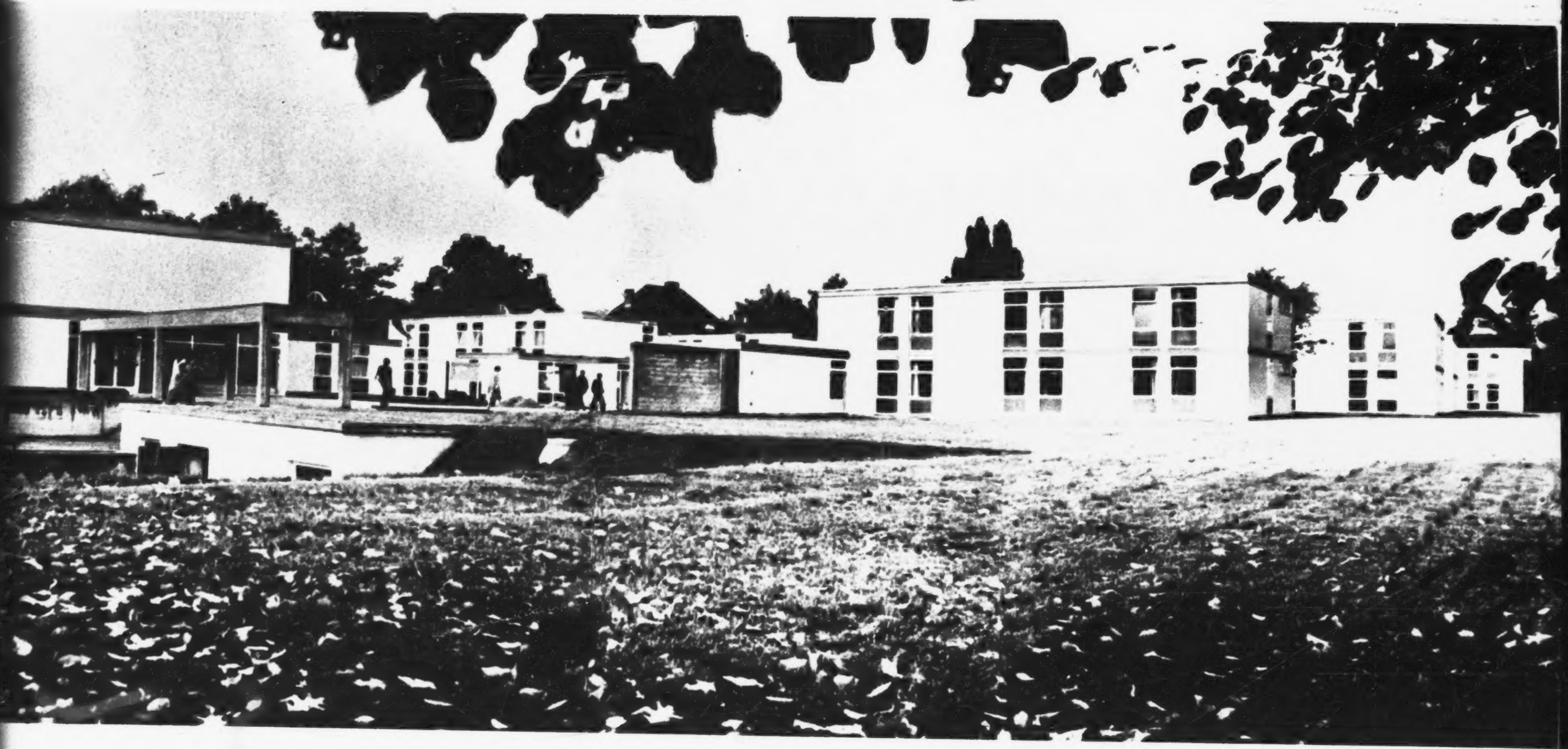
While the optimum size of residential living groups is not definitely established, the experience of housing officers indicates that they should be small enough for each member to know the others as more than casual acquaintances. At many institutions groups of from 35 to 50 students—either men or women—have been regarded as suitable, but there are tentative indications that groups of 8 to 20 tend to develop into better working communities, and some colleges have planned their housing units for student groups within this size range.

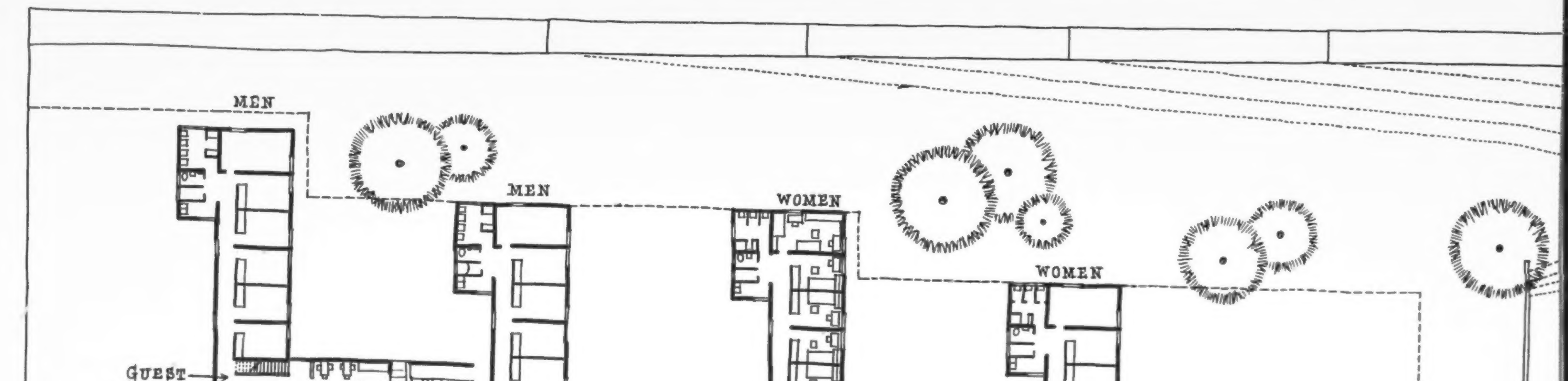
*continued on page 42*





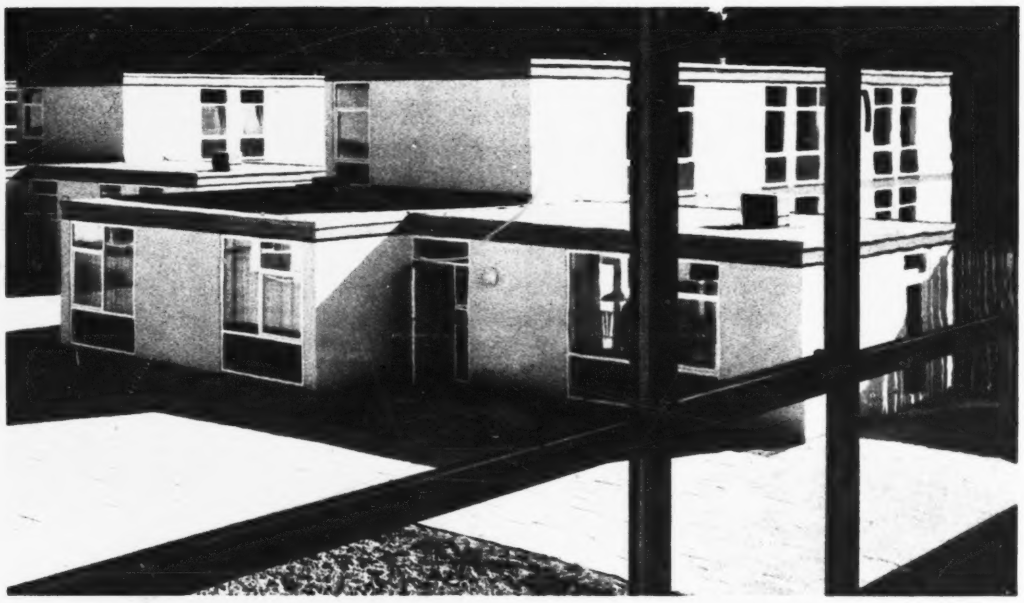


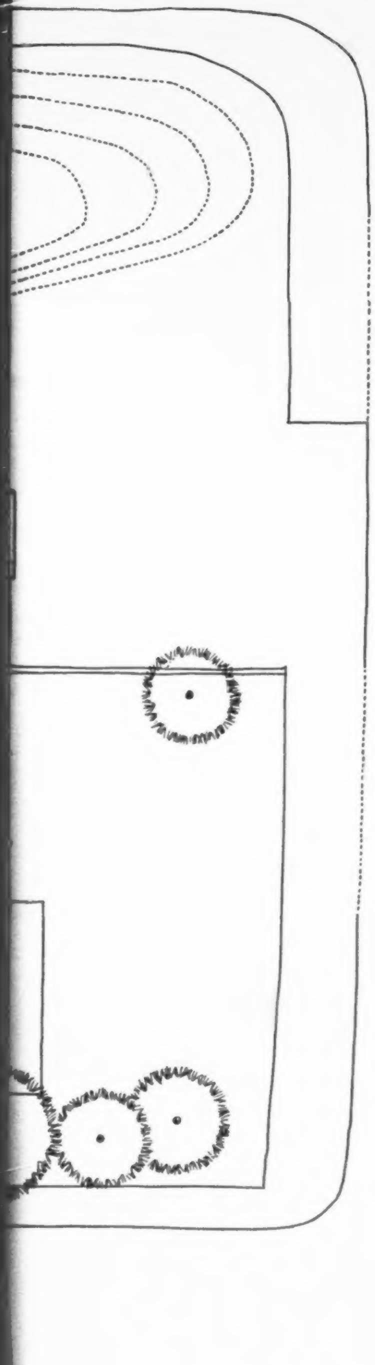


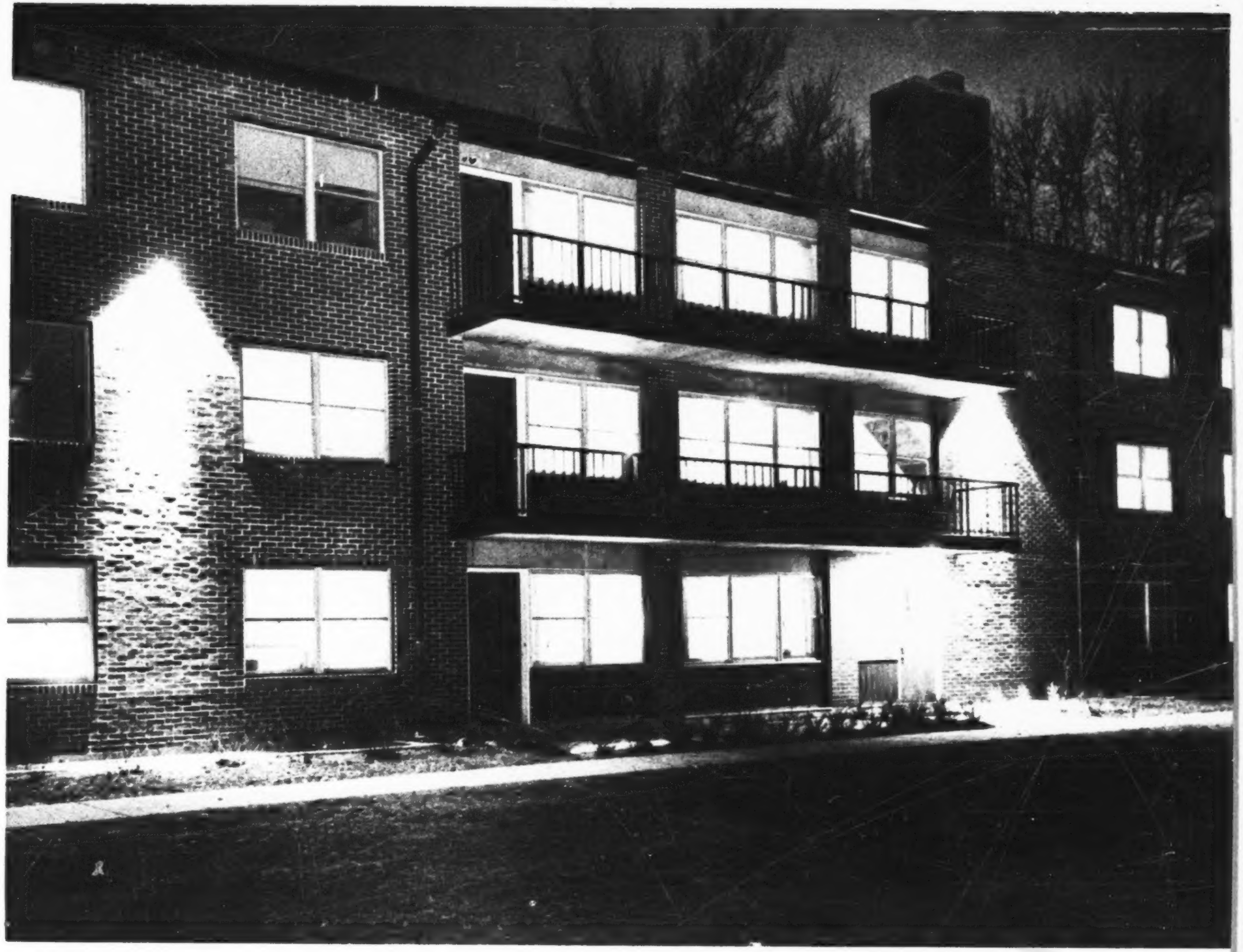

MEN
MEN
WOMEN
WOMEN
GUEST
HOUSEMOTHER
MARRIED STUDENTS
KITCHEN
COMMONS
LIVING
LOBBY
KIT
ADVISER
DINING
MEN
MEN
MEN
MEN

## An Integrated Student Community

**University of Technology, Berlin-Charlottenburg.** *Segregation of men and women, married students and single students, is the rule on most United States campuses. In contrast, this prize-winning project draws a cross-section of the student population—men, women, and married students—into a unified community centered about a paved "town square" and a commons building*







At Knox College, for example, satisfactory groupings of 8 men each were created by "vertical plan" residence halls built in multiples of 4 double bedrooms, each focused on a living room. It is interesting to note too that when a similar residence hall consisting of 12-man units was built, the larger groups tended to subdivide into groups of 6 and 6 or 8 and 4.

Experimental evidence on the effect of space arrangements on group subdivision is also limited. In most residence halls, friendships and groups tend to develop along each floor, but it is possible for students living on adjacent floors to form groups if there are few enough students per floor and there is a convenient place where all of them can gather.

### Student Room Arrangements

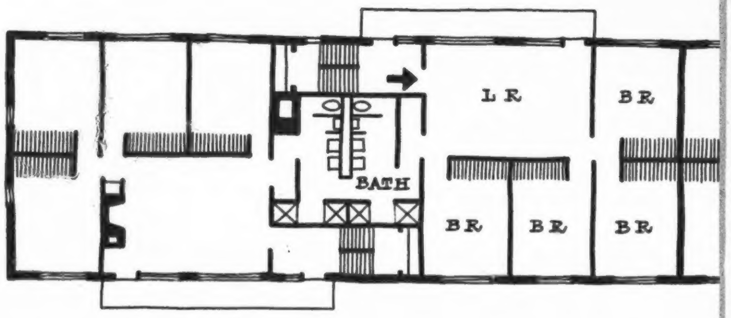
Student rooms themselves can be arranged in a variety of plans, although the most common arrangements merely string a series of boxlike rooms together in a pattern all too often reminiscent of a cell-block.

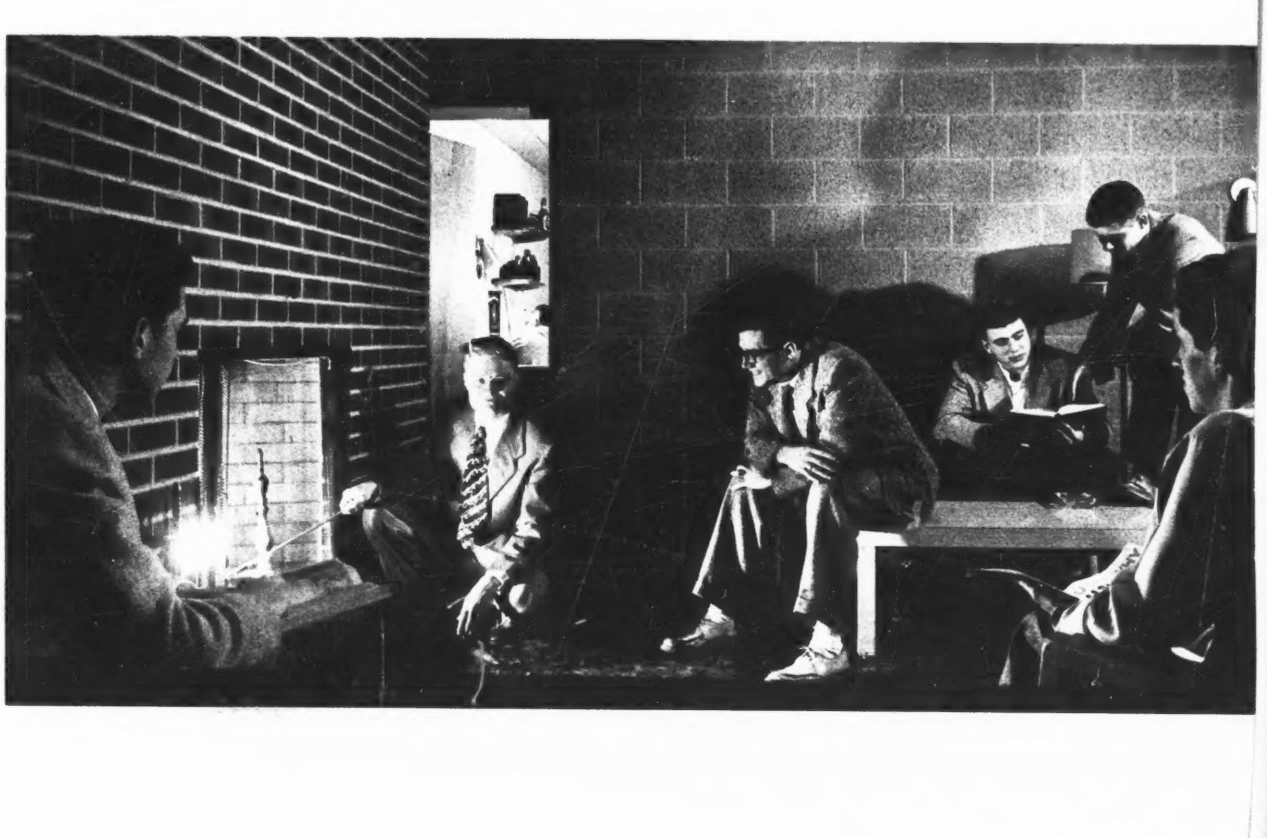
*The traditional vertical house plan* is no longer generally used for two principal reasons: (1) fire safety regulations that require access to two stairwells for emergency exit, and (2) the increased cost of housekeeping. The plan does, however, reduce space for circulation by eliminating through corridors, and it creates small, readily identifiable living groups. To retain these advantages while overcoming the drawbacks, the vertical house plan has occasionally been modified by connecting two houses with doors that are closed to normal traffic but provide access for housekeeping and serve as emergency exits.

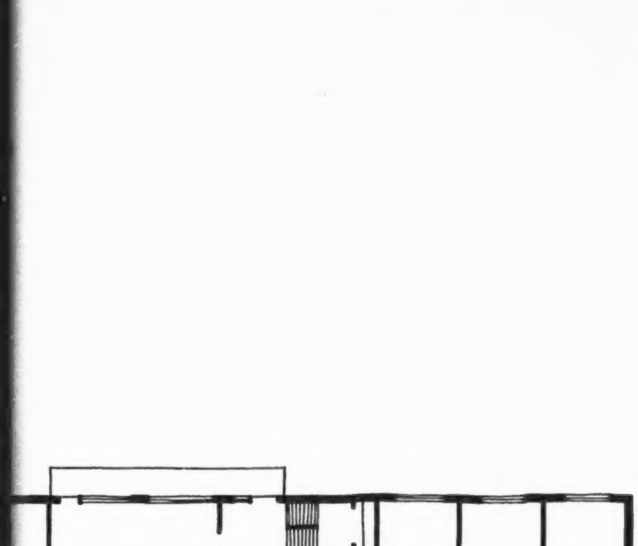
*The corridor plan* is the most common and the least satisfactory way to arrange student rooms. The most frequent version is the double-loaded corridor with rooms opening off either

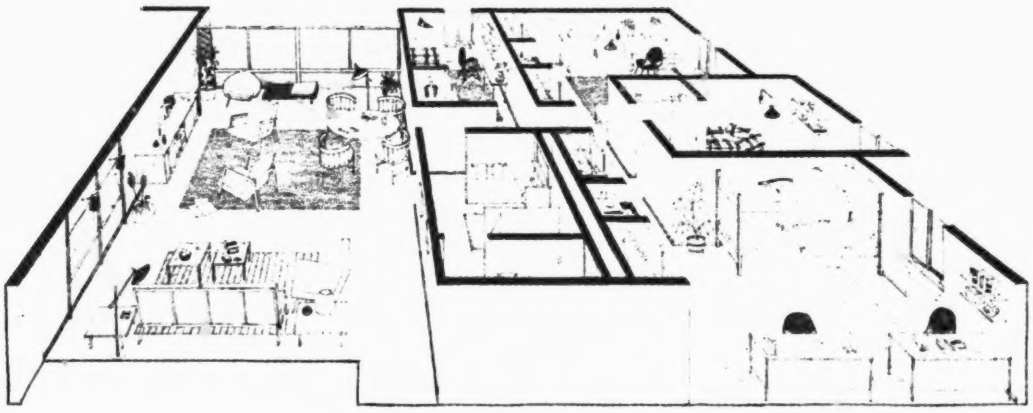
### Vertical House = Small Groups

MEN'S RESIDENCES, KNOX COLLEGE. *Because it arranges student rooms along vertical rather than horizontal lines, the vertical house plan minimizes corridor space and encourages natural groupings of students. For the same reason, it makes housekeeping difficult. The Knox House Plan tries for both worlds by providing housekeeping access through a community bath between houses. More important, it installs each student in a group of only 8 or 12, as opposed to floor groupings of 30 to 100 in many college residences*



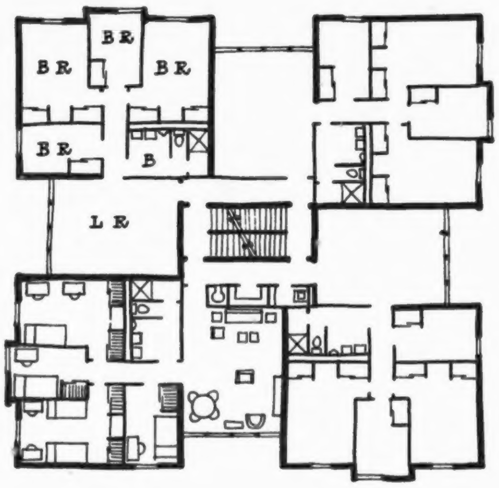


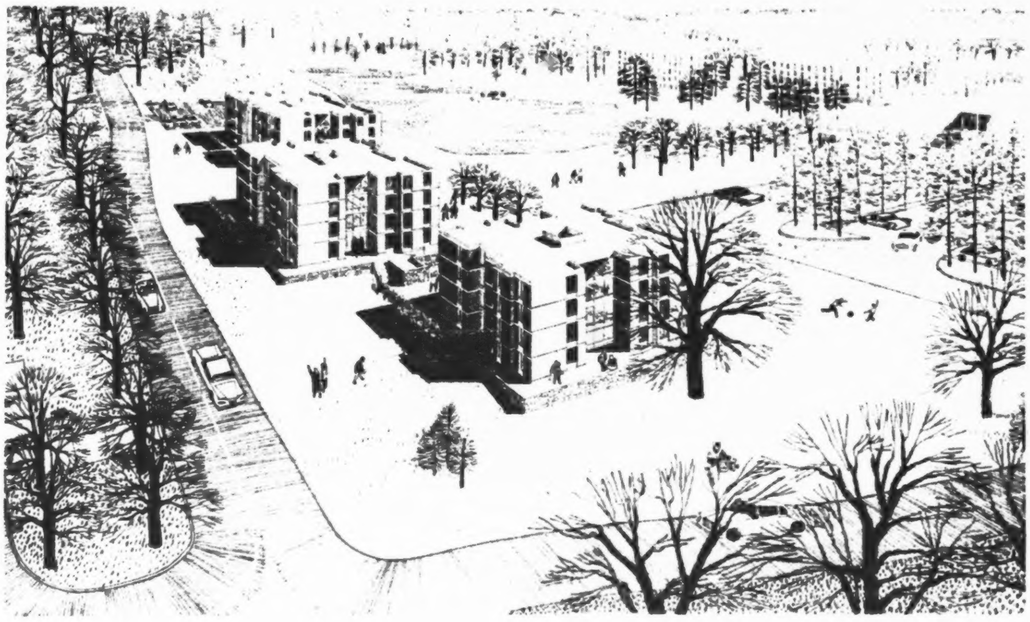




### The Vertical House Revisited

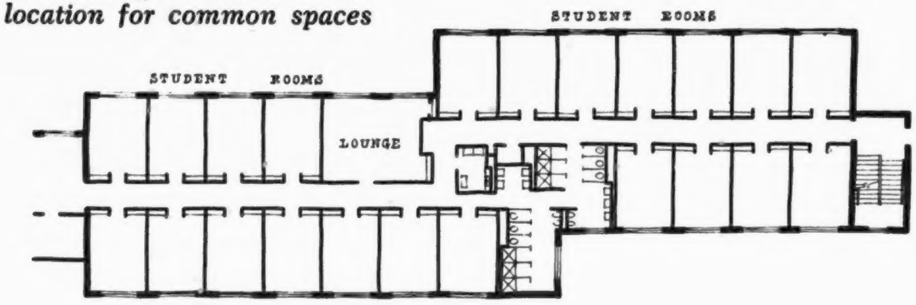
**PROPOSED HOUSING, WASHINGTON UNIVERSITY.** *In this version of the vertical house plan, four suites for six students each (two single bedrooms and two doubles plus living room-study and bath) are arranged around a vertical service-circulation core. As a result, student groups are small and flexible, and corridor area is virtually nonexistent, but the problem of housekeeping access is neatly side-stepped. The two exits required for fire safety are provided by separating the stairways in the core*





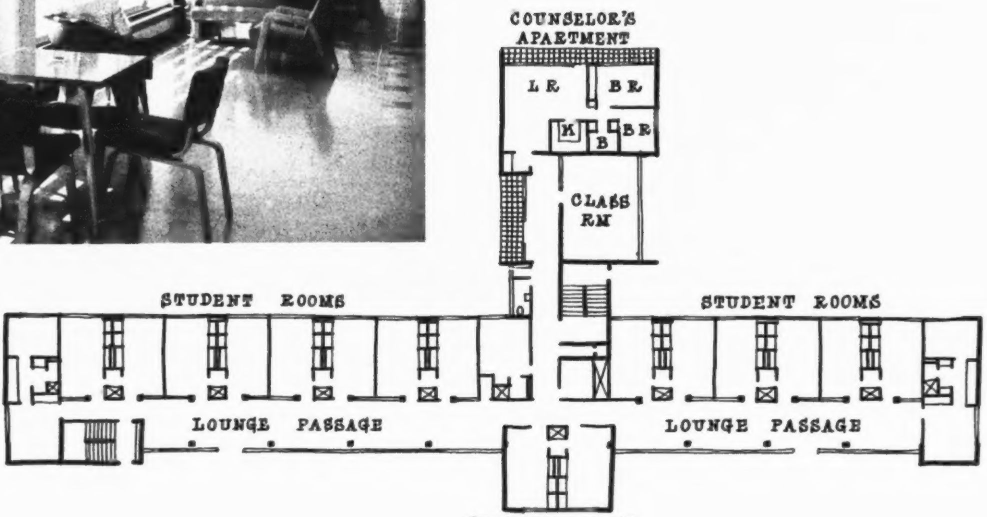
## The Corridor Minus

**Hume Hall, University of Florida.** *If uninterrupted, the typical double-loaded corridor can look like a tunnel and sound like bedlam. Hence devices like the jog corridor, which reduces the distance sight and sound must travel. The offset is also a convenient location for common spaces*



## . . . The Corridor Plus

**Residence Hall, Thompson Point Development, Southern Illinois University.** *Because it arranges student rooms along one side instead of two, the single-loaded corridor cuts in half the number of potential noise sources. In the example shown here, the passage was widened to double as a lounge, although such a use could cancel out the acoustic advantage of the single-loaded corridor. The window wall breaks the visual monotony and makes the narrow lounge seem more spacious*



side as in a conventional hotel.

This arrangement, however, poses perennial noise and conduct problems that have given rise to such solutions as the offset corridor—which simply provides for a turn or a jog to interrupt sight and sound about midway in the structure—and the single-loaded corridor.

The single-loaded arrangement has several variations. At one university the corridor has been widened to include informal lounge and meeting space, with student rooms on one side and a glass window wall on the other. This plan has some of the advantages of a suite arrangement, but it juxtaposes several different types of building use in a way that could interfere with all of them. At many colleges, especially in the southern states, balcony-type exterior corridors are used to simplify plans, permit through ventilation, and reduce the cost of constructing and maintaining corridors and of providing a second fire exit.

Still another variation consists of widening the building and placing service facilities in an island in the center of each floor. As a result, there are two corridors per floor, with bathrooms and other service facilities on the inner side and student rooms on the outer side. This arrangement has the advantage of reserving all exterior wall space for student rooms. Furthermore, the service island acts as a sound barrier between corridors and helps to subdivide the floor.

*The suite plan* combines a common study or sitting room with one or more connecting bedrooms and, usually, a private bath. These spaces have been arranged in various ways: study and relaxation in one room, with sleeping and storage in others; study and dressing in one room with sleeping and social activity in others; or several standard single or double

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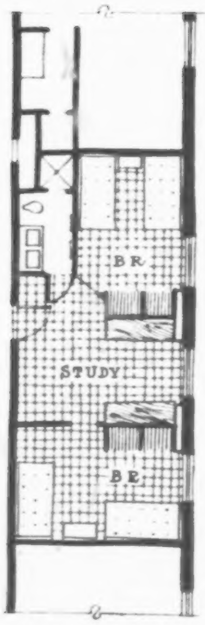
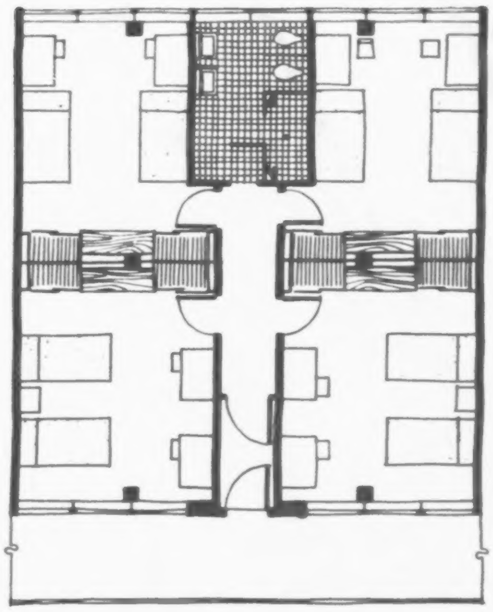


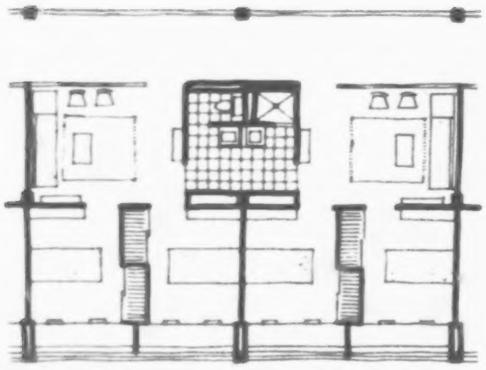
## Suites for Sleep and Study

*Suites, which arrange student rooms around a common space, usually provide for some separation of use.*

**Tate Hall, Central Michigan College.** *In the suite plan at left, two double bedrooms flank a study.*

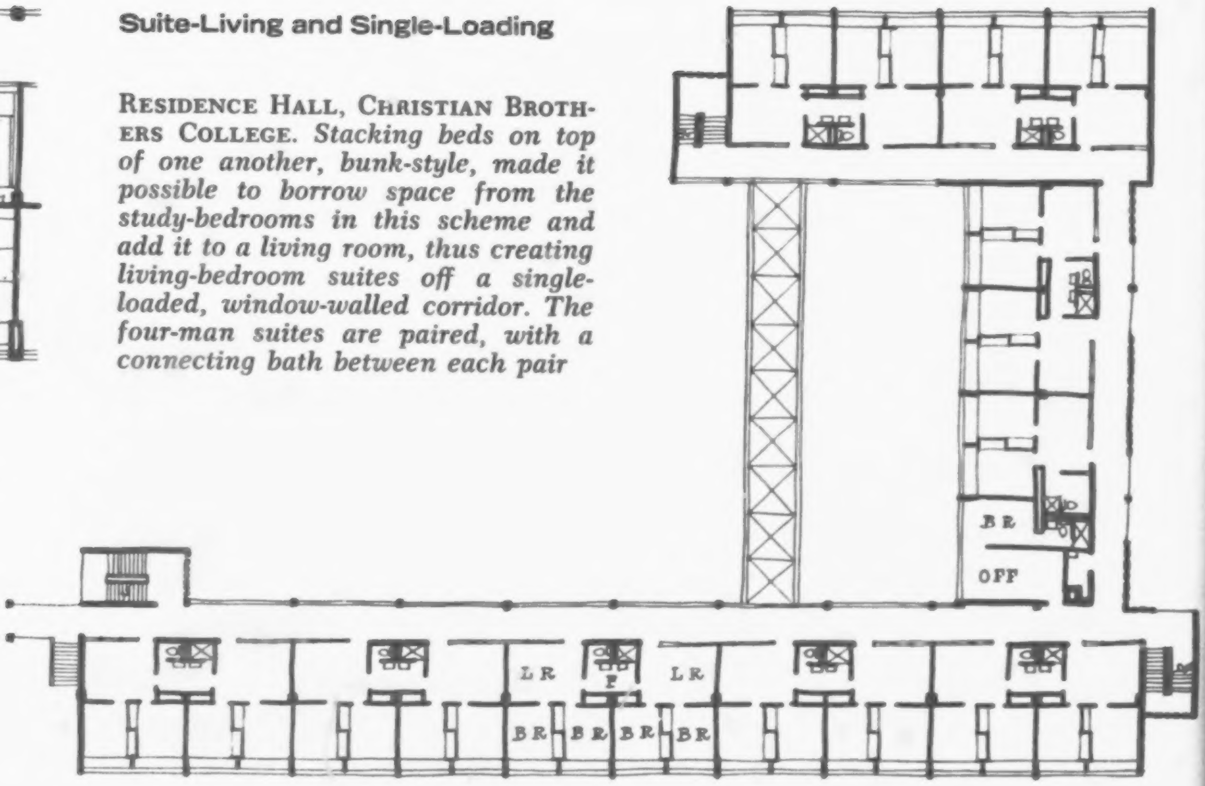
**Bragaw Hall, North Carolina State College.** *In the plan at right, students in four double study-bedrooms share a bath. Sound isolation of each room is provided by the wardrobes and hallway. Access to the suite is from a balcony-corridor*

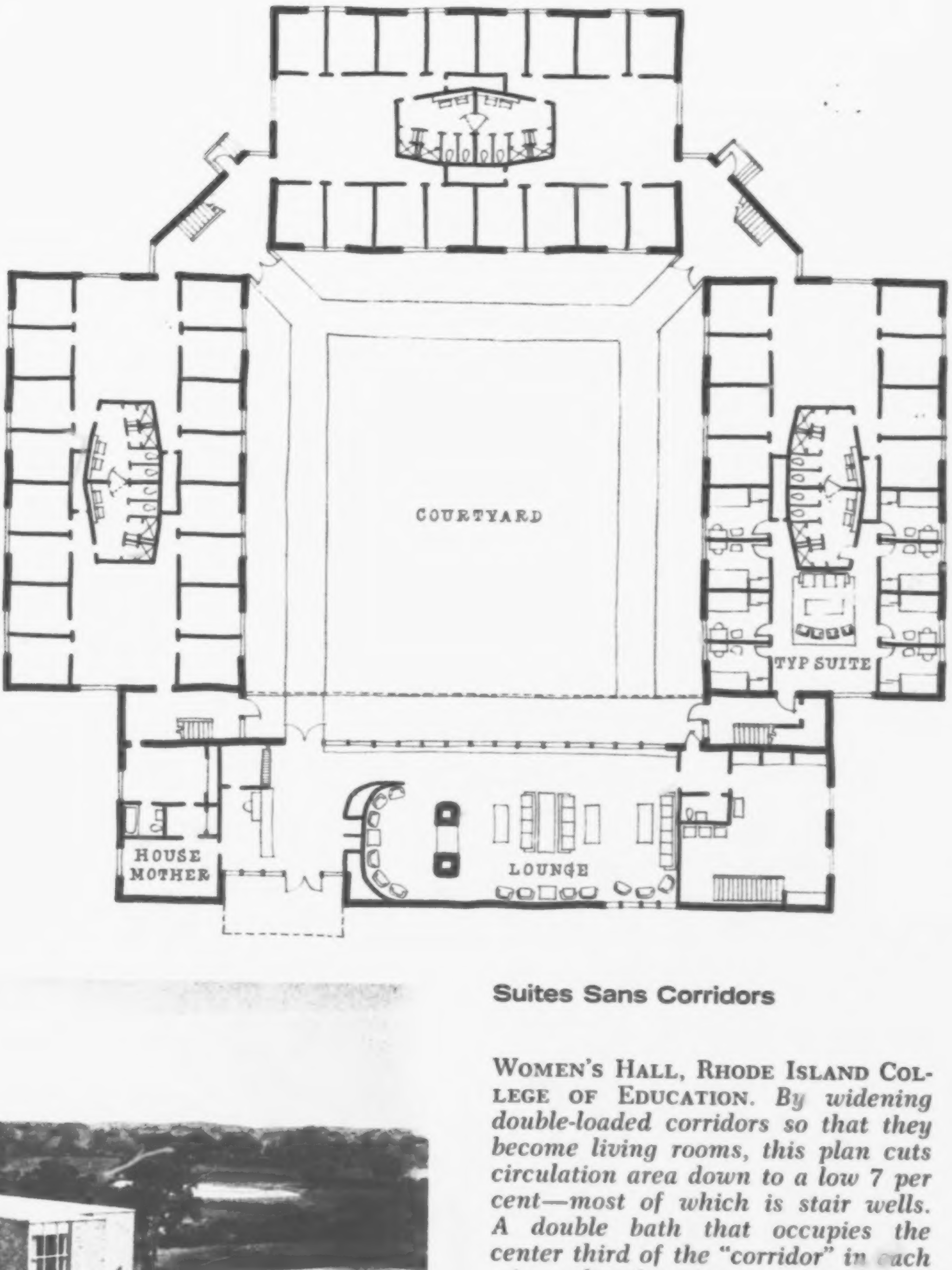


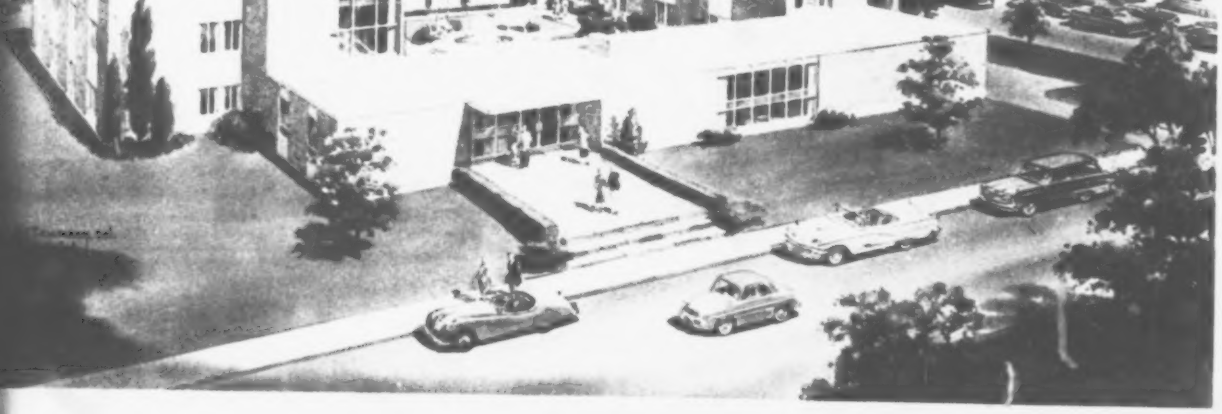


## Suite-Living and Single-Loading

**Residence Hall, Christian Brothers College.** *Stacking beds on top of one another, bunk-style, made it possible to borrow space from the study-bedrooms in this scheme and add it to a living room, thus creating living-bedroom suites off a single-loaded, window-walled corridor. The four-man suites are paired, with a connecting bath between each pair*





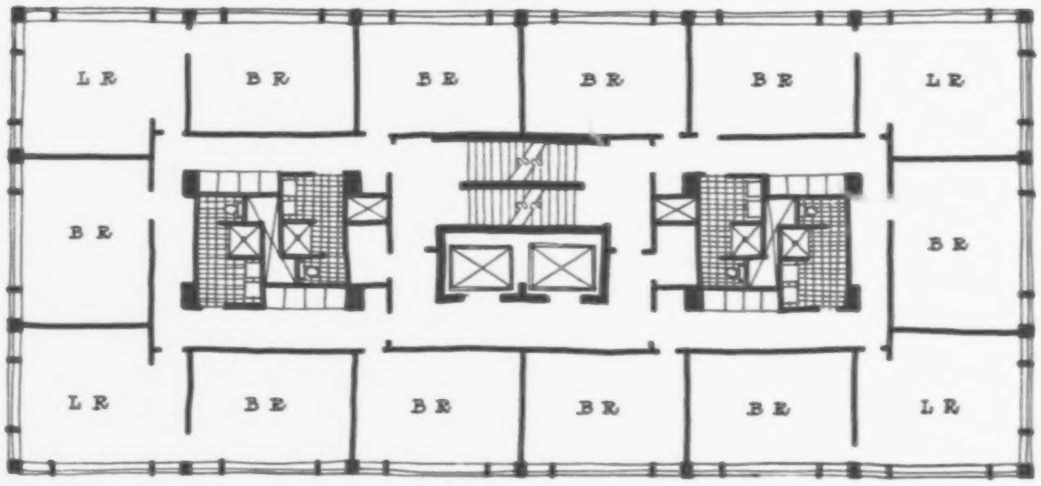


### Suites Sans Corridors

**Women's Hall, Rhode Island College of Education.** *By widening double-loaded corridors so that they become living rooms, this plan cuts circulation area down to a low 7 per cent—most of which is stair wells. A double bath that occupies the center third of the "corridor" in each wing splits the wing into two vertical houses consisting of 8 single rooms grouped around a living room. The second house exit required for fire safety is provided by a panic door between the two sections of the bath*

### Core Plan Anticipates Change

**Leverett House, Harvard University.** *Single rooms and double suites ranged around a service-circulation core provide above-average accommodations for today (see photos of suite bedroom and living room above and below), plus flexibility for tomorrow. The rooms are so planned that the addition or subtraction of a door here or a partition there can divide the suites into study bedrooms, or combine what are now single rooms into suites. This has in fact been done on several floors, where four-man or tutor suites incorporate several smaller units*

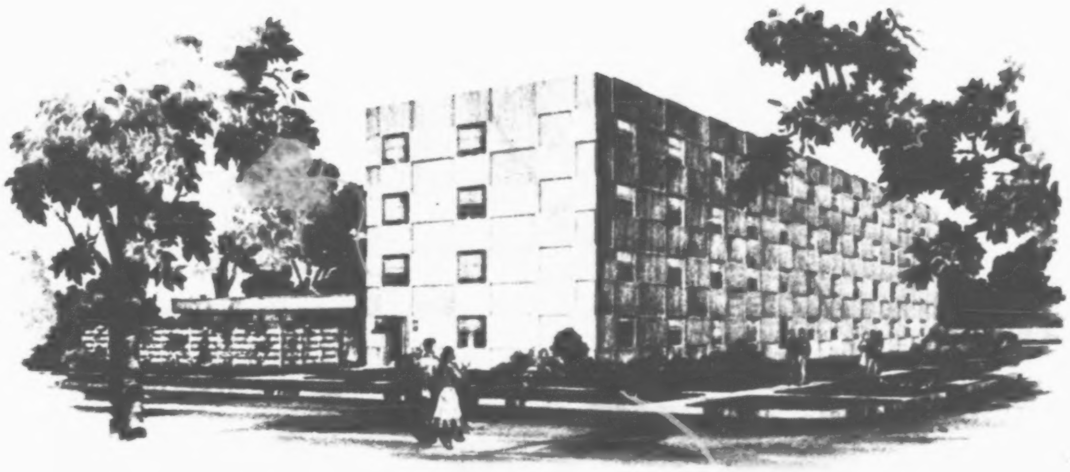


rooms opening on a common study. The major value of the suite plan is the opportunity it affords for closer student association and the freedom it gives students for using the various spaces as they wish. Where suites are arranged in a vertical house plan, special effort may be needed to bring the smaller groups together.

### Variations on the Theme

*Apartments.* With the addition of kitchens or kitchenettes, suites become apartments. This type of housing unit is rarely assigned to single undergraduates because of such drawbacks as difficulty of supervision, lack of common lounges and meeting rooms, and undue fragmentation of living groups. However, if these problems are recognized and overcome during the early stages of planning, it might be advantageous to construct apartment units which could be assigned to married students, to faculty members, or to single graduates or undergraduates, depending on policy and demand. In this case the apartment project might require some common-use space, as well as physical arrangements for somewhat closer supervision.

For married students and faculty, apartment projects are usually patterned more or less after commercial practice, with units arranged in vertical house plans or along corridors. In most cases, basic furnishings are provided by the institution, largely to reduce property damage due to moving in and out. Sometimes a few unfurnished units are available, or extra bedrooms are unfurnished.



Frequent planning problems are inadequate storage space, inferior finishes in baths and kitchens, and poor provisions for study, although this last complaint might be countered by including a project study room with individual carrels.

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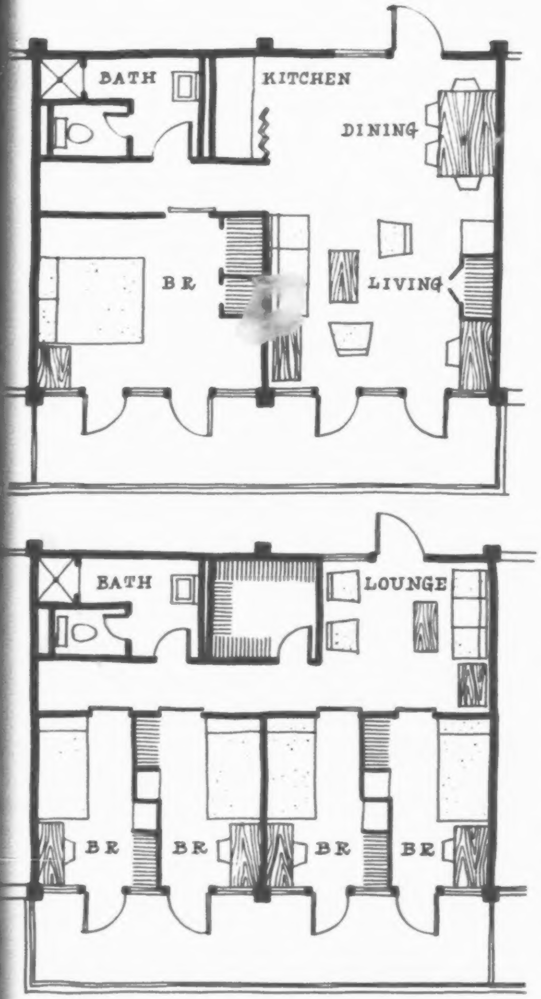
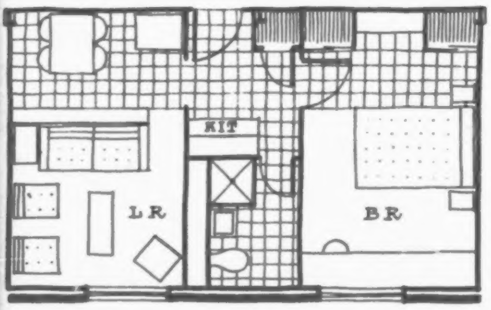


## From Apartment to Suite . . .

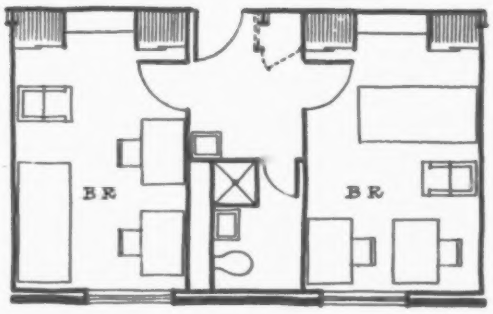
*Uncertainty as to who—men or women, married students or single—will make up tomorrow's swollen enrollments is a perpetual headache for housing planners. One of the more practical remedies is the use of room arrangements that can be converted, with a minimum of remodeling, from apartments for married students to suites for single men or women, and vice versa. Such an arrangement, which may be particularly useful for graduate students' housing, makes the housing planner less reliant on his crystal ball by giving him a high degree of flexibility in assigning living quarters.*

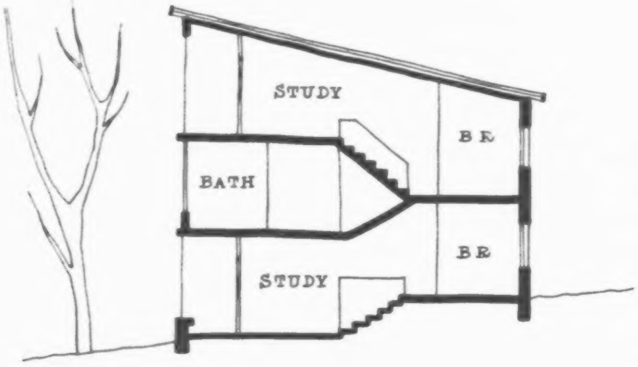
APARTMENT-SUITES, SAN FRANCISCO THEOLOGICAL SEMINARY. *In the arrangement shown at left, a typical one-bedroom apartment can be converted to a suite with the subtraction of the kitchen unit and the addition of a few partitions. A partition near the entry converts the former kitchenette to a large closet. Wardrobe-dresser units partition the living room and bedroom into four single study-bedrooms. And the apartment dining room becomes a lounge*

## . . . With the Greatest of Ease



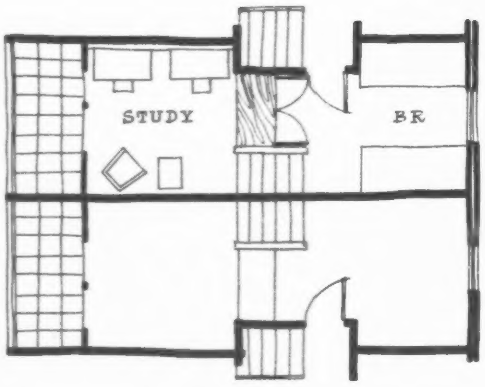
WESTGATE HALL, IOWA STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY. *In this similar arrangement, the simple substitution of furniture and equipment—notably the swap of the kitchen unit for a lavatory—makes it possible to transform an apartment into a four-man suite with bedrooms linked by a foyer and a connecting bath. (Beds are double bunks)*

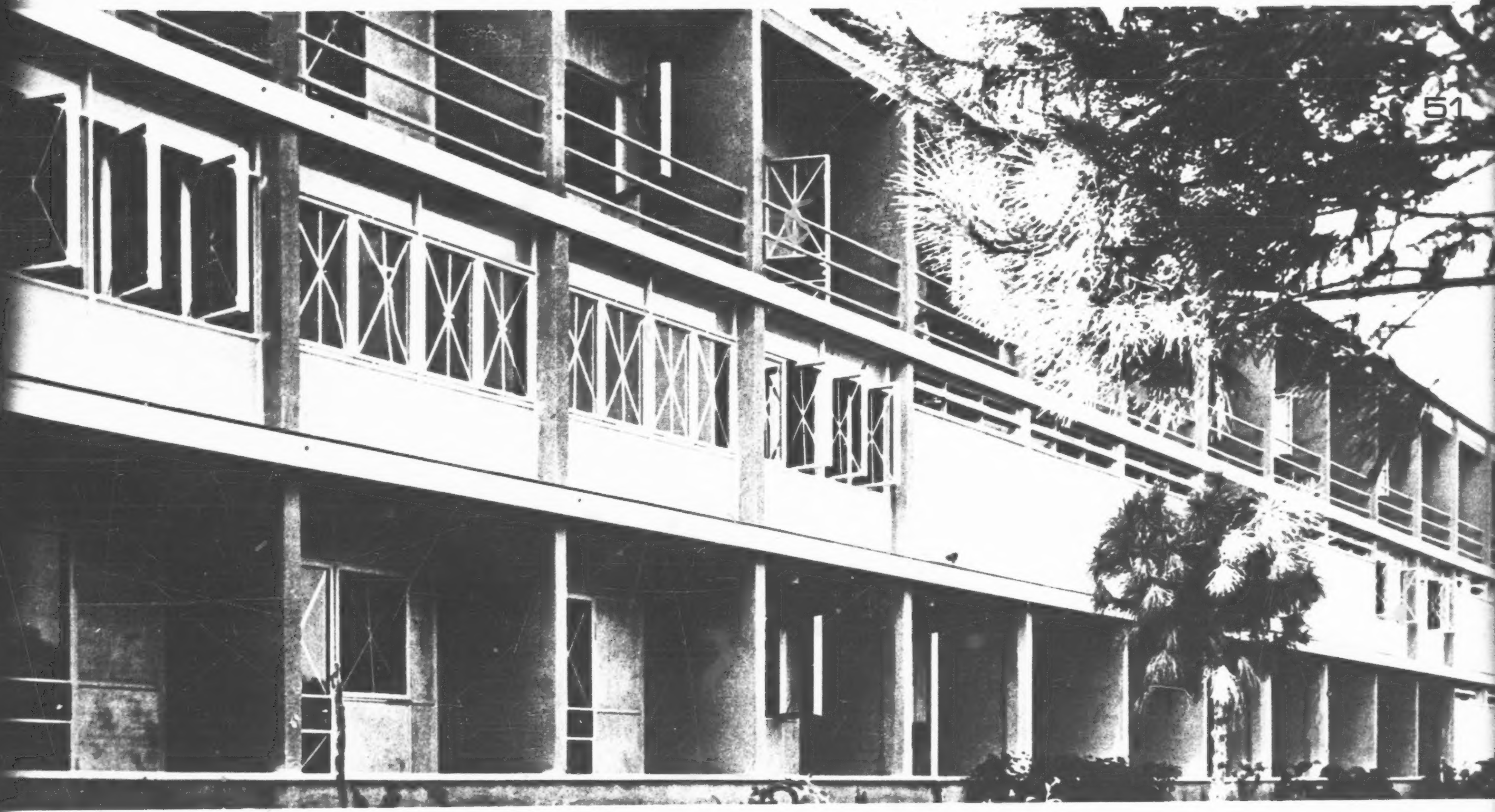




### Split-Level Suites

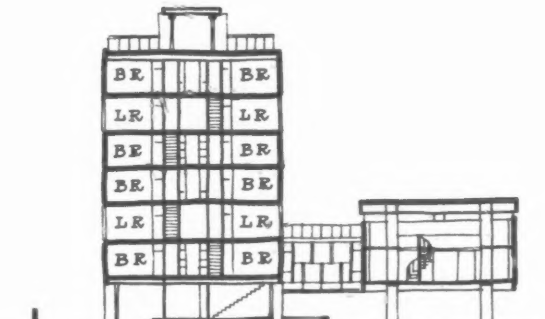
STUDENT HOSTEL, ISRAEL INSTITUTE OF TECHNOLOGY. *Entering on the middle floor of this split-level building, students go up or down half a story to enter their two-man suites. A sloped roof gives the building three stories of height at the front, two at the back. (See section.) The middle layer, which extends only half the width of the building, serves as a corridor for both room floors. Baths and other service spaces are located along its exterior wall. The suites themselves are also on two levels, with study-living rooms up or down half a flight from each bedroom*

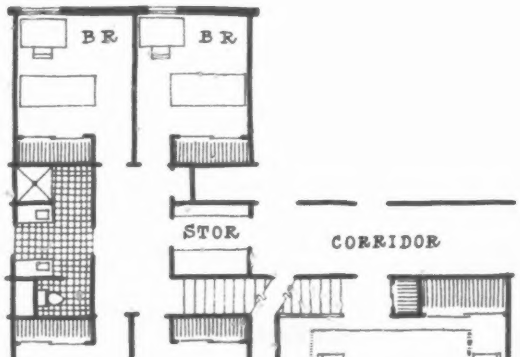


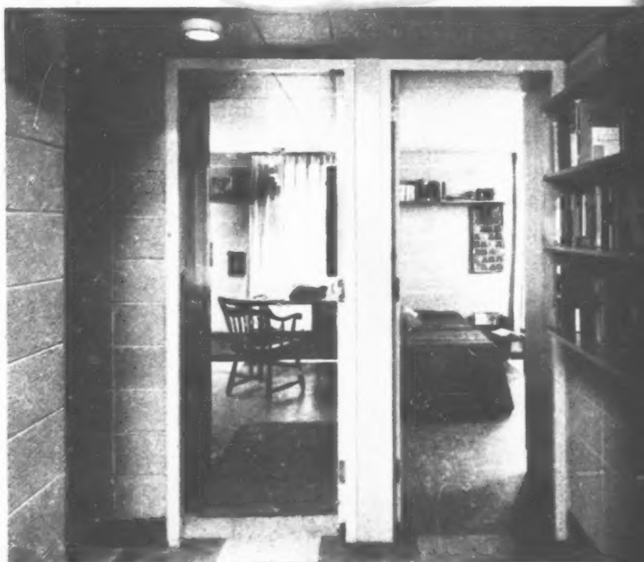


### Two-Story Suites

**Quincy House, Harvard University.** *By sandwiching living room floors between the bedroom floors so that each suite of four single bedrooms is reached via a living room on the floor above or below, this economical duplex scheme eliminates corridors altogether on the four bedroom floors. It also makes possible through ventilation, fast skip-stop elevator service, noise isolation, and the inclusion of such amenities as large, pleasantly-furnished rooms, despite a per-student budget only one-third that for Harvard's earlier houses*

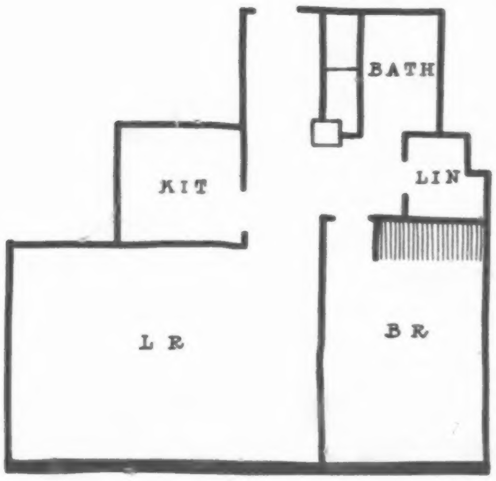






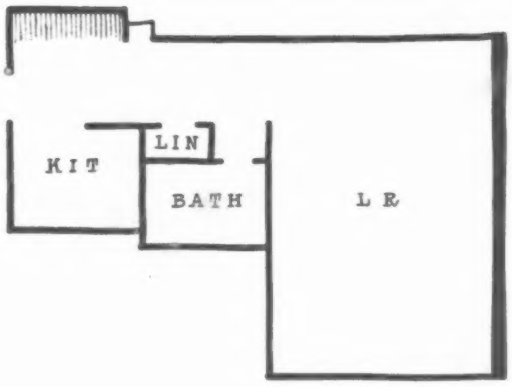
**Married Students' Apartments . . .**

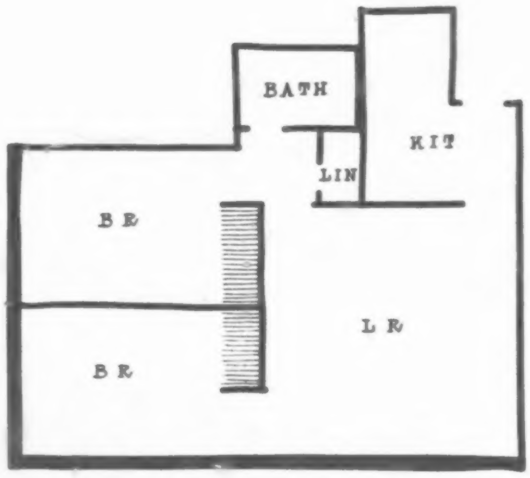
High-Rise Apartment Building, Tulane University. *Universities that find themselves cramped for growing space are turning more often to high-rise housing for married students as well as single students. This eight-story apartment block, which is occupied primarily by graduate and professional students, consists of two wings, one of which contains only one-bedroom apartments. The second wing has two-bedroom units on six floors, but two floors contain one- and three-bedroom units designed so that a partition change can convert them all to two-bedroom apartments on demand*



**. . . Rise Sky High**

Bailey Hall, Illinois Institute of Technology. *This nine-story structure is one of four similar high-rise apartment buildings in a newly developed residential area that also includes a shopping center, a chapel, recreational facilities, and parking lots. Bailey Hall's 88 efficiency, one-bedroom and two-bedroom apartments are assigned to faculty and staff as well as to married students*





*Cooperative housing,* the undergraduate version of apartment living, is believed to be more important than the relatively few examples and small number of students involved would seem to indicate. Such houses offer a unique opportunity to put into practice many of the theories of desirable group size and organization discussed earlier. But their main advantage is minimum individual living expense due to shared responsibility for housekeeping and for food preparation.

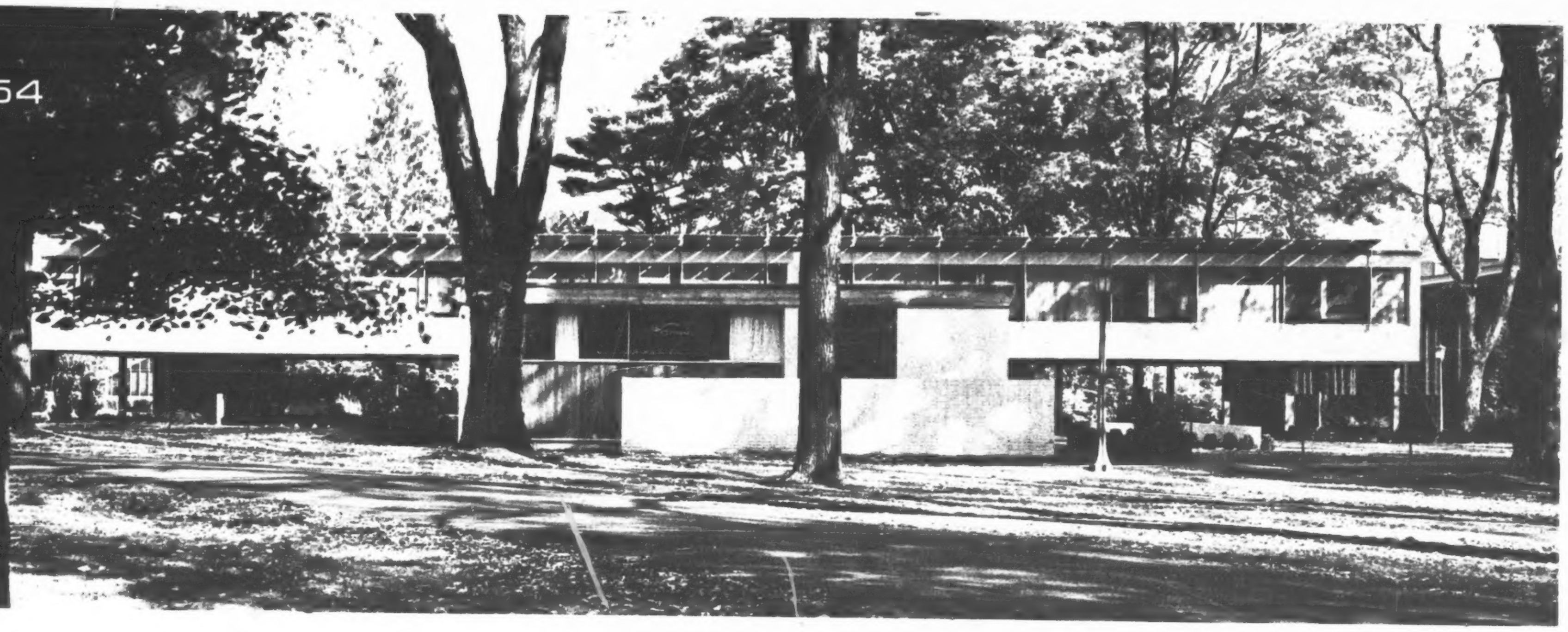
However, cooperatives should not be labeled merely as facilities for needy students. (If financial aid is their only purpose, students with limited resources would be better served by assignment to the college's other housing units, with expenses covered by appropriate scholarships.) Sometimes membership in cooperatives, with its accompanying increase in both freedom and responsibility, is considered an honor, as in the case of scholarship houses. In other cases, groups are formed around mutual interests. Coops may be supervised by church groups or private organizations as well as by the colleges.

*Coeducational housing,* another departure from more usual housing arrangements, also has a number of advantages. Sharing of public areas eliminates duplication of facilities and contributes savings in construction costs. With proper design, there is greater flexibility in re-allocating space to meet changing demands. Joint participation in educational programs and social activities seems to lead to more mature relationships between men and women.

Coeducational housing often groups student rooms for men and women in separate buildings, with public rooms such as lounges, libraries, and dining rooms in a central structure for joint use. In other versions, common-use rooms in the separate resi-

*continued on page 56*

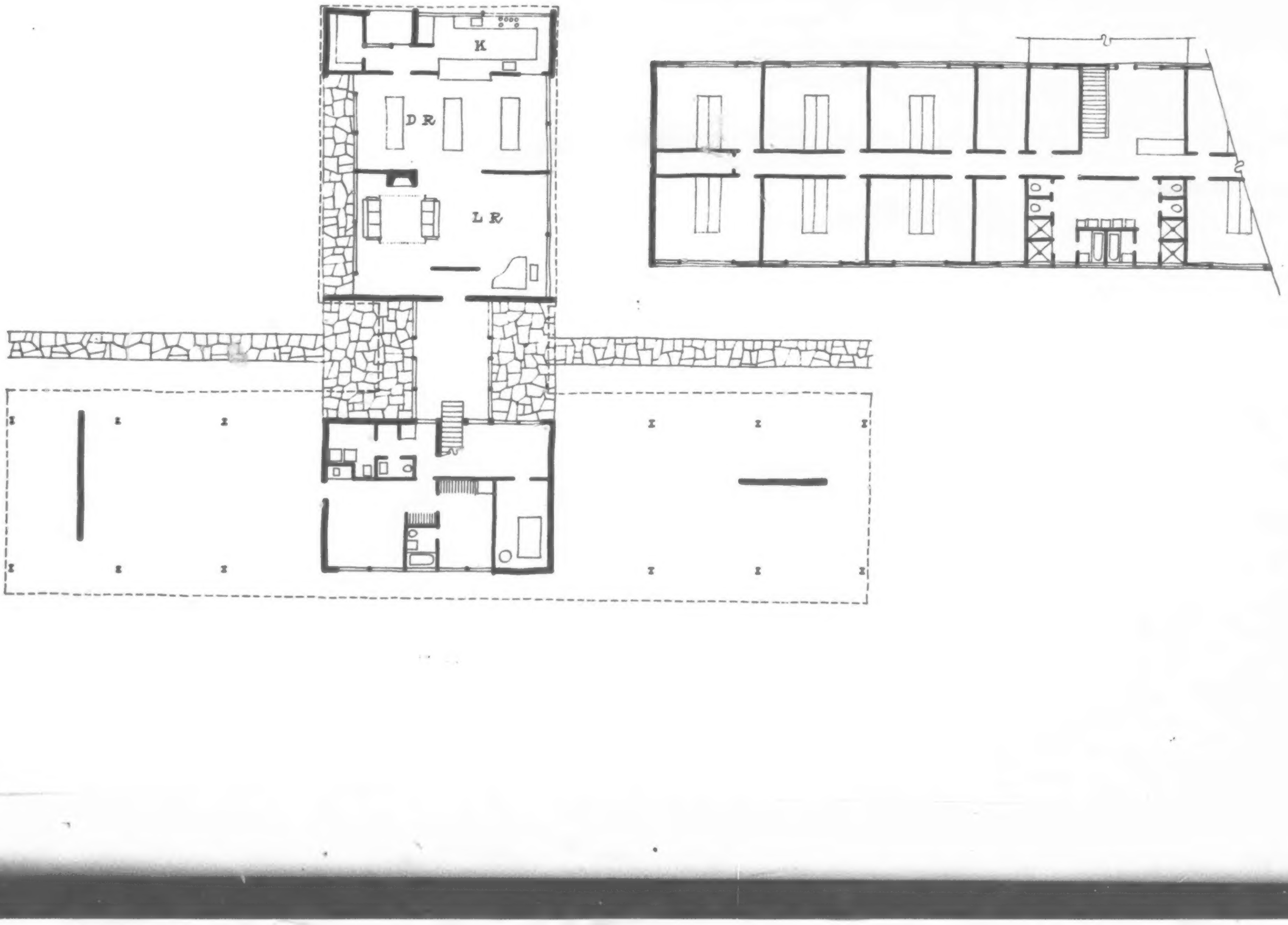
**WATKINS AND MILLER HALLS, UNIVERSITY OF KANSAS.** *Opened in 1926 and 1937, and still in use, these endowed scholarship halls are among the pioneers of cooperative housing. In return for doing their own cooking and housekeeping, the girls who live in them receive room and board, and the advantages of small group living, for a low $35 a month*



## At Home at School

**Dexter M. Ferry, Jr. Cooperative House, Vassar College.** *This later example of cooperative housing is the home of 27 sophomores, juniors and seniors chosen on the basis of scholarship, citizenship, and, to some extent, financial need. The students who live in the house are responsible for its operation, sharing expenses as well as cooking and other household tasks. As a result, each girl's expenses are cut by about $500 a year.*

*The clean horizontal lines of the house give it a residential quality very expressive of the activities within. The girls are assigned to double study-bedrooms on the second floor, but the community life of the group centers about the downstairs living room, dining room, terraces, and kitchen. The ground floor, which criss-crosses the second floor, also contains the housemother's quarters*



### Boys and Girls Together

COEDUCATIONAL HOUSING, UNIVERSITY OF CALIFORNIA AT LOS ANGELES.

*The students say:*

*"At first I found the girls around here a distraction. But now I've learned to accept them, and I don't cuss any more."*

*"It broadens a man's experience."*

*"I've done more socializing than I've ever done before, but also more studying. When you know men are around just for the asking, you don't waste so much time daydreaming."*

*"It's wonderful not only in a social way, but also in a scholastic way . . . This dorm setup forces students to develop self-discipline when it comes to study."*

*The hall advisers say:*

*"There is no strained relationship here between the sexes. Boys and girls make friends in a casual way. They eat together in the dining hall. They seem to take each other for granted."*

*"Girls have a civilizing influence on college boys. And in the presence of boys, girls are usually on their best behavior. The whole standard of conduct is raised."*

*"When men and women live together in the same building, they gradually learn to acquire poise and presence, to acquire ease and naturalness in their relationship."*

*These quotes from Lloyd Shearer's article, "A Coed Dormitory" (*PARADE*, December 11, 1960), help to explain why two of UCLA's three newest residence halls are coeducational. Sproul Hall (above), which was designed as a joint hall from the beginning, has separate six-story wings for men and women, with common facilities, including a dining room, on the ground floor. Dykstra Hall (right) was planned as a residence for men. But because of the student demand for more coed housing, it was converted when only a year old. Now women are assigned to the top three or four of the building's ten stories, and men and women share lounges ( center ), recreation areas, and dining room*

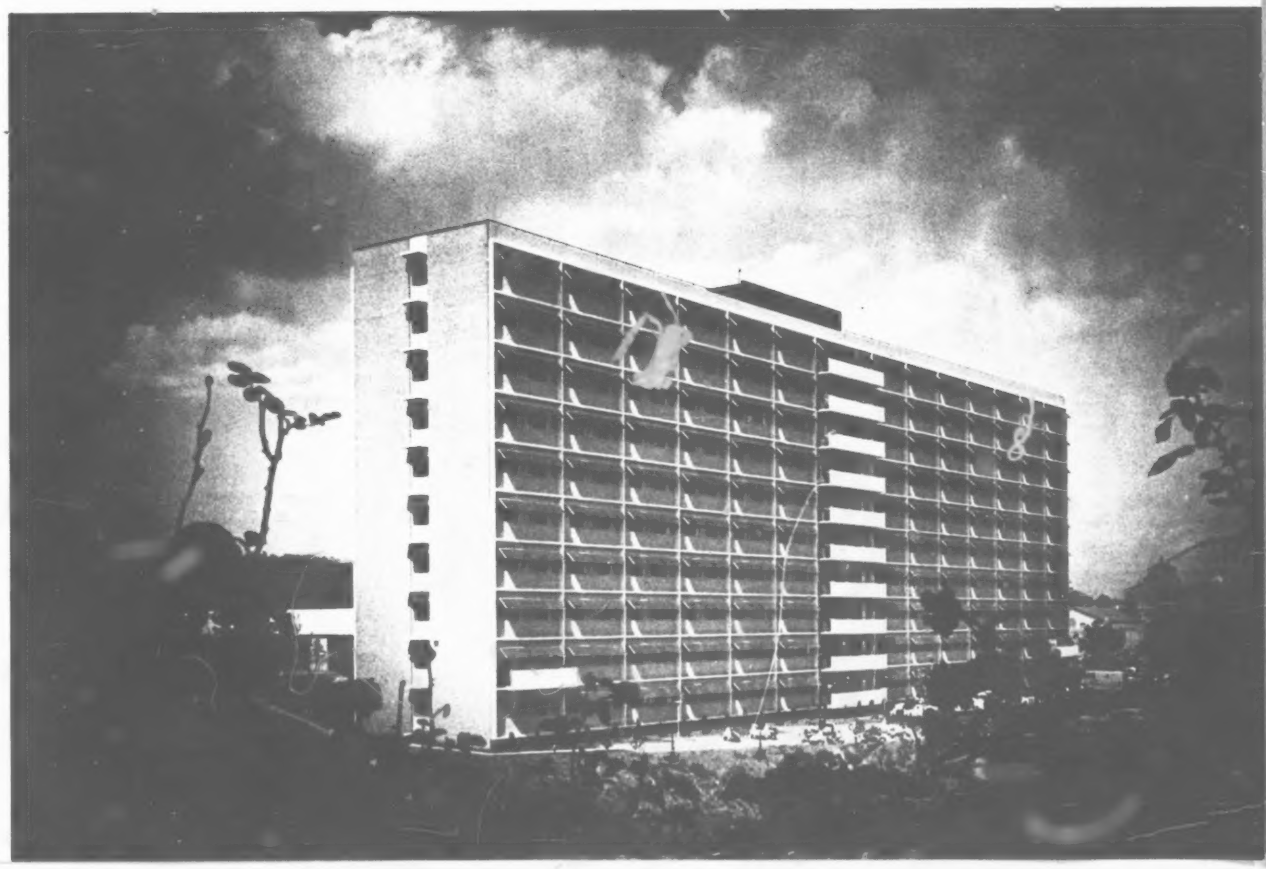


**Table 3:**

### AREA PER STUDENT AND PHYSICAL CONDITION OF EXISTING STUDENT HOUSING

| Condition of Buildings | Single Students | | Average Area per Student |
|---|---|---|---|
| | Number | Per Cent | |
| Satisfactory | 47,483 | 86.0 | 246.6 sq. ft. |
| Poor | 3,585 | 6.5 | 207.8 |
| Unsatisfactory | 4,138 | 7.5 | 157.7 |
| Total | 55,206 | 100.0 | |
| Average | | | 237.4 sq. ft. |

| Condition of Buildings | Married Students | | Average Area per Student |
|---|---|---|---|
| | Number | Per Cent | |
| Satisfactory | 1,627 | 44.1 | 681.7 sq. ft. |
| Poor | 287 | 7.8 | 608.1 |
| Unsatisfactory | 1,771 | 48.1 | 465.5 |
| Total | 3,685 | 100.0 | |
| Average | | | 572.1 sq. ft. |

*Note: "Poor"="need major rehabilitation."*
*"Unsatisfactory"="should be razed."*

*Source: U.S.O.E., College and University Facilities Survey, Part 3, Inventory of College & University Physical Facilities, Preliminary Report, released in 1960.*

**Table 4:**

### GROSS SQUARE FEET PER OCCUPANT IN EXISTING RESIDENCE HALLS

| Type of Occupant | Average Area Satisfactory Housing | Average Area New Housing |
|---|---|---|
| Single men | | 212.7 sq. ft. |
| Single women | | 253.4 |
| *Average, all single students | 246.6 | 230.8 |
| Married students | 681.7 | 667.2 |
| *Average, all students | | 268.7 |
| Faculty | | 693.9 |

*Notes: No distinction is made between projects containing extensive common-use spaces, food service, etc., and those containing little more than student rooms.*

**averages are weighted; single student housing greatly exceeds married.*

dence halls may be open to both men and women, or a single coeducational building may be divided vertically or horizontally into separate living sections for men and women.

## PLANNING FOR QUALITY

The housing environment provided by a university invariably conveys to students and the world at large something of the institution's attitudes and values.

Cramped, poorly constructed student rooms betray a lack of interest in their occupants; large, well-equipped recreational facilities imply that social activities are considered especially important; skimpy desks and non-existent bookcases leave no doubt of the place of scholarship in the college's scheme of things.

All of these things add up to an impression of quality—or the lack of it. Just what constitutes desirable quality is a perplexing question. But the answer is certainly neither luxurious suites nor Spartan barracks, and it may not even be a happy medium between the two. The real measure of quality is how much the building adds to the education of the students who live in it. Imaginative design, not dollars spent, is the critical factor.

### Space per occupant

It is easy to see but difficult to prove that too little floor area reduces the quality of residences and encourages deterioration. It should be noted, however, that the Office of Education's current *Facilities Survey* reports a striking coincidence (See Table 3): the residence halls that provide too little floor area per student are also those which are in such poor physical condition that they should be razed. To rehabilitate them would be too costly, if not impossible. Whether rapid deterioration occurs because damage is unavoidable in cramped quarters or because overcrowding invites misuse, this is a strong argument against crowding too many students into one room or providing rooms that are too small.

How much area to provide per student depends upon a number of factors, including the amount needed for such common-use spaces as educational and recreational facilities and food service. The areas given in Table 3 include these common facilities in a wide range of old and new buildings. For comparison, Table 4 summarizes similar data on more than 400 projects constructed or planned between 1955 and 1959. The average area per student in these projects, for student rooms only, is 106 square feet for men, 112 for women.

### Durability

Since college buildings are expected to last for half a century (they are often bonded for forty years), the *sine qua non* for their design and construction is enough durability to weather this long life with as little maintenance as possible. Floor and wall surfacings and finishes, doors and windows, hardware, and furniture all have to retain their original qualities under hard use.

Fortunately, there are materials that are both durable and attractive. Indestructibility need not be the only criterion for the selection of finishes and equipment, nor need it be emphasized to the point of daring students to mar wainscots or dent furniture. Such properties as noise control, immediate versus long-term cost, and appearance can also be considered. In fact, some housing designed with these considerations in mind has turned out to be more durable because its proud occupants cherish it. So-called luxuries—plastered walls, carpeted floors, draped windows and well-designed furniture—may prove inexpensive in the long run and hold up surprisingly well. Some of them also provide such fringe benefits as improved acoustics.

### Noise Control

Because noise interferes with study, sleep, and other daily activities, noise control is essential. And noise sources abound in college housing, beginning with the voices and footsteps of students, particularly in corridors, stair wells, and community bathrooms. Outdoor noise and the noise from equipment such as plumbing fixtures, ventilators, and cleaning systems may also be disturbing.

Noise is controlled by eliminating as many sources as possible, by isolating others, and by installing sound-absorbing materials. Thus corridors should be as short as possible, stair wells should be isolated by doors (which also increase fire safety), and stairs and community baths should be located so that they disturb as few rooms as possible.

Since sound travels through even the smallest openings, the best noise barrier is massive, solid construction, although, unfortunately, economy often forces acceptance of light construction and routine workmanship.

For example, a wall plastered on both sides, or one made of thicker or denser masonry, well laid, offers more noise resistance than the common 4-inch lightweight aggregate or cinder block wall. If they are precisely fitted, factory-assembled wall components like window walls and door-and-frame units also reduce noise penetration. In addition, when the wall between a student room and a corridor is lined with built-in equipment, closets, or even private baths, the mass or weight of the wall is in effect increased and sound transmission is cut substantially.

Acoustical absorbents, which should be fire resistant and easily maintained, are useful, but they should not be expected to solve noise problems exaggerated by the very character and organization of the building's spaces. Moreover, the surfacing materials commonly used on ceilings are not the only effective acoustical absorbents. Carpeting, which not only absorbs sound but also reduces noise due to impact, and draperies, which are also sound absorbent, are currently being considered for some student rooms as well as for public spaces.

Outside the building, trees, shrubbery, and grass, all of which absorb some sound, are preferable to sound-reflecting paved courts, parking areas, and sidewalks close to building walls. Unless they are air conditioned, buildings planned around courts, or with wings placed so that sound reverberates between them, often intensify noise problems.

### Lighting

Good lighting depends not only on the proper selection and location of fixtures and portable lamps, and on proper amounts of light, but also—to a greater extent than is usually realized—on the reflective properties of the surfaces the light strikes.

Dark colors absorb light, light colors reflect it, and intense colors may either absorb it, as deep blue does, or reflect it, as bright yellow does. If they are applied over large areas, intense colors are likely to be too stimulating or depressing, but used discreetly, they provide desirable accents and welcome relief from monotony.

For studying and other close tasks, the Illuminating Engineering Society recommends high-intensity lighting accompanied by the elimination of glare, which requires a minimum of highly polished surfaces. Excessive contrast is also discouraged, suggesting that work surfaces such as desk tops be light in color.

General room lighting has different requirements: intensity need not be so great, and somewhat more contrast is permissible. Even so, "hot spots" of light—bare light bulbs, reflections from mirrors, and reflected glare from polished surfaces or high-gloss paint—are likely to be especially disturbing in students' rooms and should be avoided. Corridor lighting should not penetrate into rooms.

### Mechanical Systems

Heating, ventilating, and air conditioning systems may be of several types and levels of quality, but whatever system is used, some degree of local control of temperature should be provided to allow for varying individual reactions.

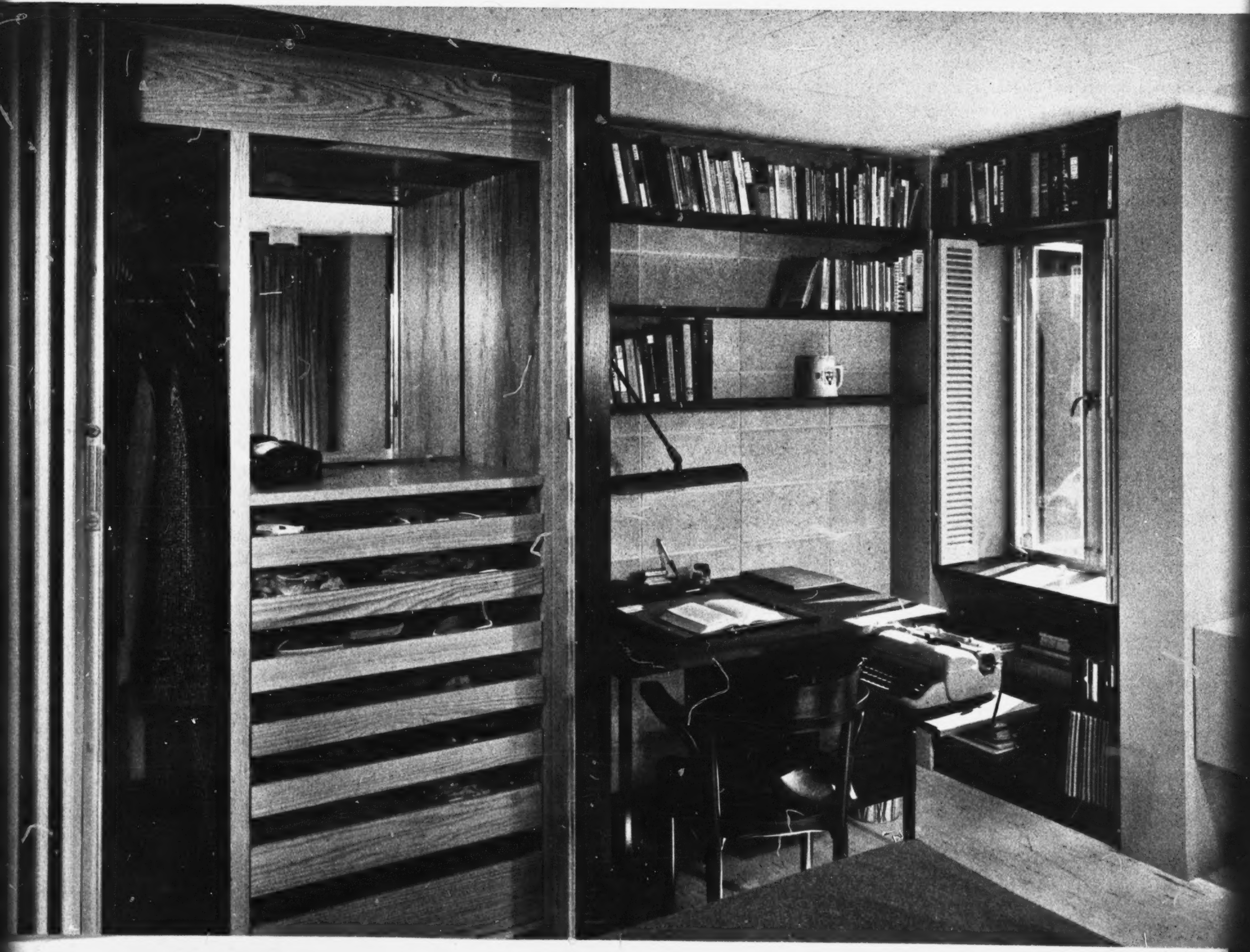
Ventilation, air movement, and humidity control are closely related to temperature since each affects the perception of the others. State codes often set minimum ventilation requirements, but some are antiquated, and recommendations of competent engineers are ordinarily more reliable. Noisy and humid areas such as baths, interior spaces that cannot be naturally ventilated, and spaces in which many people congregate at one time, need artificial ventilation.

When ventilation is being planned, noise must be taken into account. Grilles in walls or doors, for example, readily transmit sound. Noise transmission through the ventilating system can be reduced by lining ducts with acoustical absorbents, and using sound-isolating mountings for fans and other machinery.

It is probable that many residence halls will be air conditioned in the future, not only in the southern states, but wherever the college term extends into warm, humid seasons.

The types of air conditioning systems available range from central systems to many varieties of individual units, but the general attributes desirable for heating and ventilating residence halls apply to cooling as well. Noise is to be avoided. Local control is advisable. If air conditioning is not included during construction, provision can be made for installing it later, although this will usually increase the cost.

# PINPOINTING THE PROGRAM



THE COLLEGE HOUSING PROGRAM begins and ends with people, but somewhere along the way it must also deal with things. Before the program can be translated into a blueprint, the general statement of purpose and approach must be expanded to include the specific spaces and equipment that enable the housing unit to function effectively as shelter while contributing its share to the broad educational goals of the college.

## THE LIVING ENVIRONMENT

The simple concept of shelter, of course, implies much more than a roof. In a complex, multi-person dwelling like a college residence hall, the basic unit of the student room is supplemented by a network of service spaces and complemented by the many physical elements—lighting, heating, decoration, and so forth—that add up to a comfortable, congenial environment in which to live.

### Student Rooms

At the University of Virginia, the most sought-after student rooms are more than 140 years old. True, they were designed by Thomas Jefferson, but they are not prized solely for their historical aura: the rooms themselves are well proportioned, livable, and human in scale.

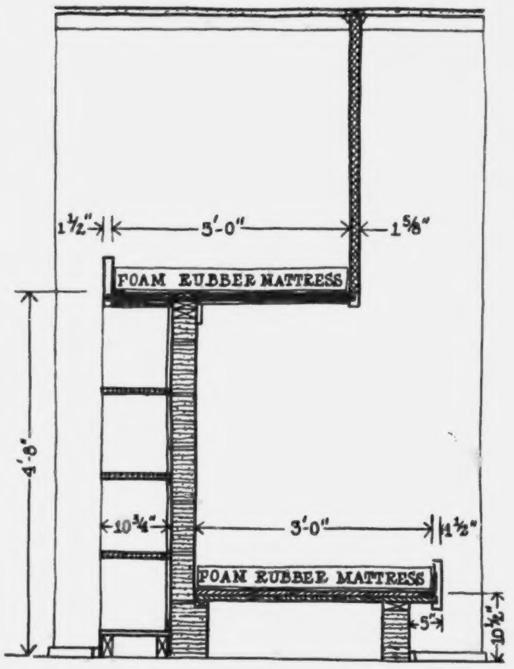
These qualities were basic in Jefferson's day, and they are no less important today. The room in which the student lives and the conditions under which he lives are fundamental to his sense of security, of privacy, and of identification with the college community.

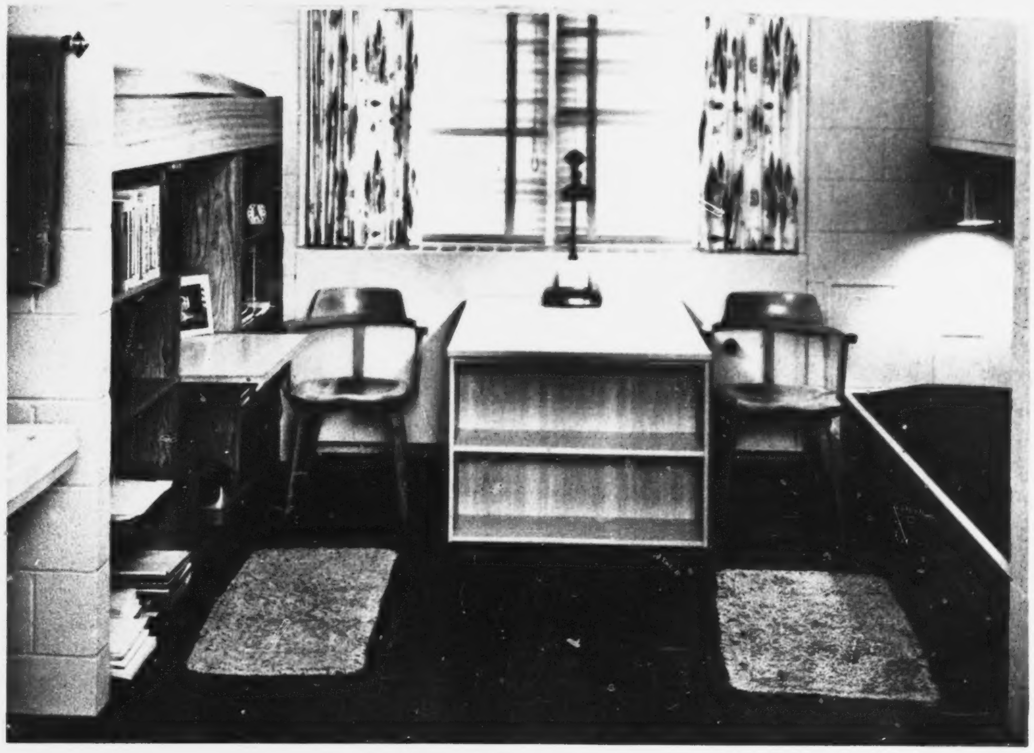
Protection from the elements is not enough: size and proportion of rooms and furnishings, style, texture, color, light, and view spell the difference between mere shelter and a rewarding place to live and work. Yet student rooms are often the least inviting spaces that the visitor can find in the college residence hall.

**Built-ins for Study and Storage**

NOYES HOUSE, VASSAR COLLEGE. *These two-room suites are divided by wardrobe-dresser units (above right) that open into the bedroom. On the study side of the suite, one is backed by bookshelves; the other by a shallow coat closet (above left)*

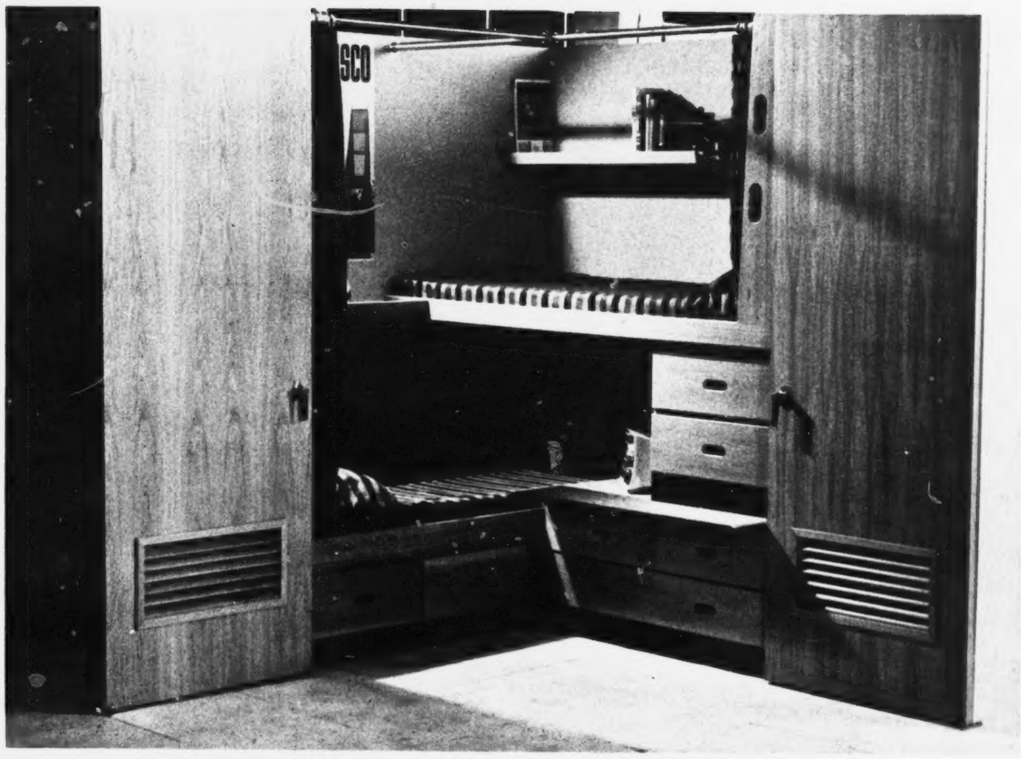
MEN'S RESIDENCE HALLS, UNIVERSITY OF SOUTHWESTERN LOUISIANA. *In this similar arrangement, a storage wall with dressers, wardrobes, and desks on each side serves as a partition between pairs of student rooms*


1½"
5'-0"
1⅝"
FOAM RUBBER MATTRESS
4'-8"
10¾"
3'-0"
1½"
FOAM RUBBER MATTRESS
5"
10½"



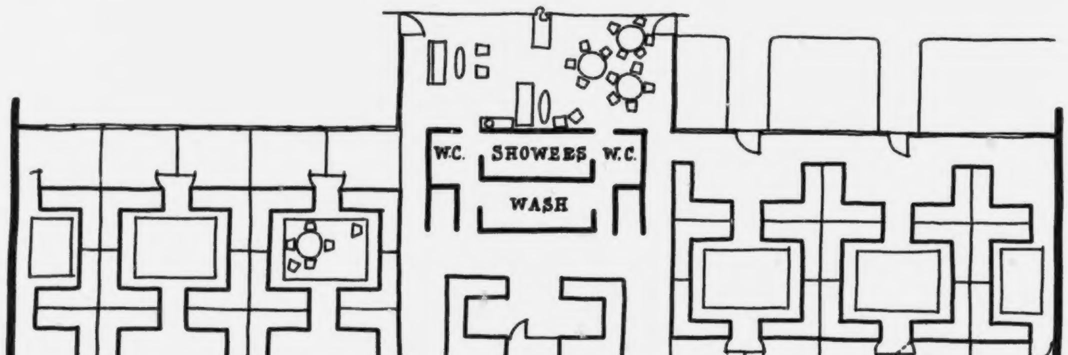
## Built-in Bunks Save Space

Sᴍɪᴛʜ Hᴀʟʟ, Tʜᴇ Fʟᴏʀɪᴅᴀ Sᴛᴀᴛᴇ Uɴɪᴠᴇʀsɪᴛʏ. *The built-in bunks shown above save space by permitting adjacent rooms to literally overlap. (See detail.) The half-wall topped by the upper bunk is faced with bookshelves that, presumably, also serve as a ladder for the bunk's occupant. The lower bunk is overhung by the top bunk in the room next door*



## Preassembled Student Rooms

Tᴇᴍᴘᴏʀᴀʀʏ Mᴇɴ's Hᴏᴜsɪɴɢ, Rᴜᴛɢᴇʀs, Tʜᴇ Sᴛᴀᴛᴇ Uɴɪᴠᴇʀsɪᴛʏ. *As a temporary measure whose prime virtue is economy (about $2400 per student instead of the usual $6800 for conventional construction in this area), bunk-storage units similar to the mock-up shown at right will be installed in prefabricated dormitory buildings. The suggested arrangements shown below call for grouping the units around common study areas*

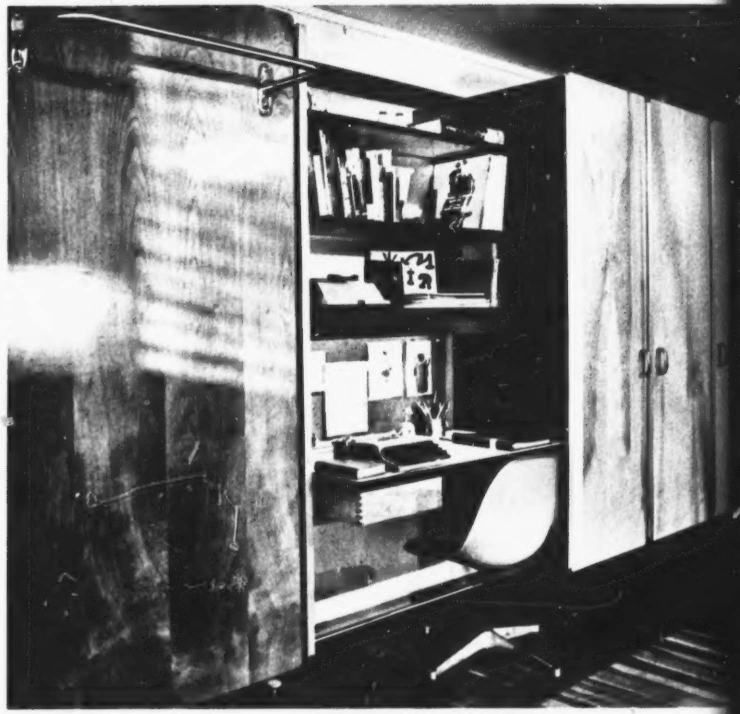

W.C.
SHOWERS
W.C.
WASH
PROCTOR
ALTERNATE LAYOUT

*Organizing the space.* The functions usually accommodated in student rooms are sleeping, dressing, storage, study, and relaxation. All can be combined or some can be separated from the others. Often the present trend toward extreme economy of space tempts designers to organize the limited area so as to separate living functions from study and to afford some privacy for individual students. To some degree this has been found useful, as when it helps to emphasize study. But too often it serves only as an exercise of the planner's ingenuity. For instance, devices that completely subdivide already small rooms have seldom been successful in use. Movable partitions or draperies simply stay open, and even bookshelves designed as "room dividers" are not always used as intended. As a general rule, building-in items of this kind only decreases the flexibility of the room, and hence restricts the student's opportunities for varying furniture placement.

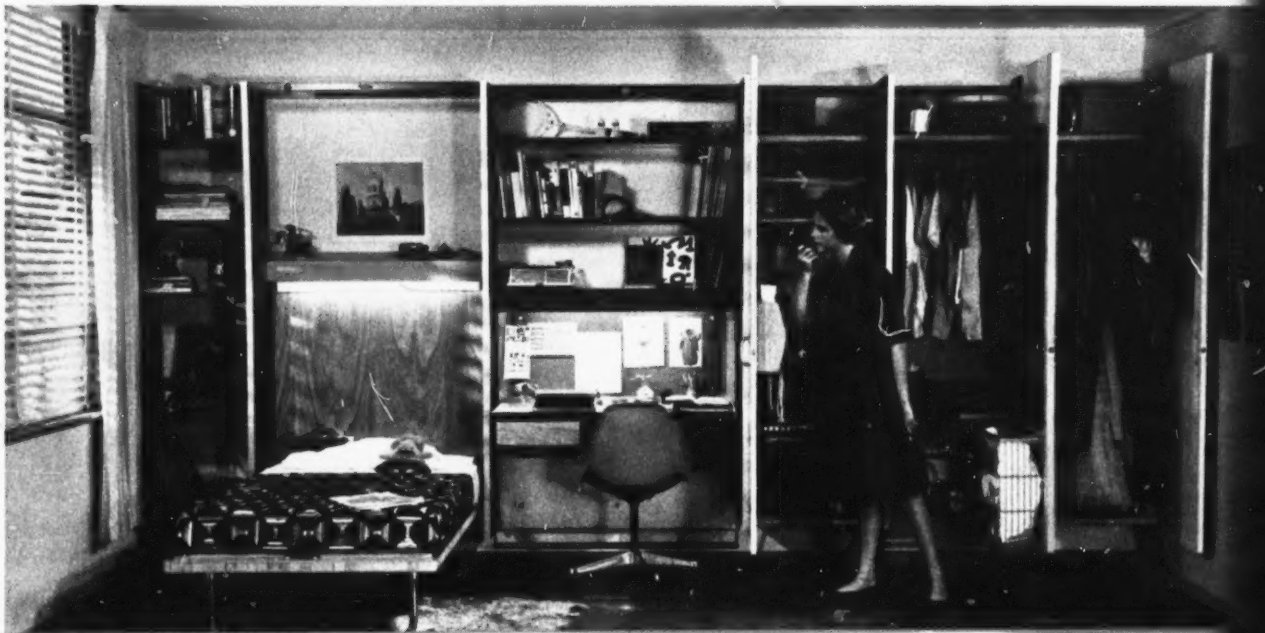
*Furnishings.* Built-in equipment is being used more and more frequently, however, since fixed furniture becomes a part of the construction contract and can be paid for with borrowed funds. In addition, built-in furnishings are less likely to be damaged or to damage floors and walls, and they reduce requirements for floor area, along with the amounts of finish materials needed for room surfaces and for certain parts of the furniture itself. If properly located, they can also serve as sound barriers. Some colleges feel that the ability to rearrange furniture at will gives students a feeling of greater freedom, but the visual impression of more space that can be gained with built-ins may be as desirable in small rooms as the freedom to shift furnishings about.

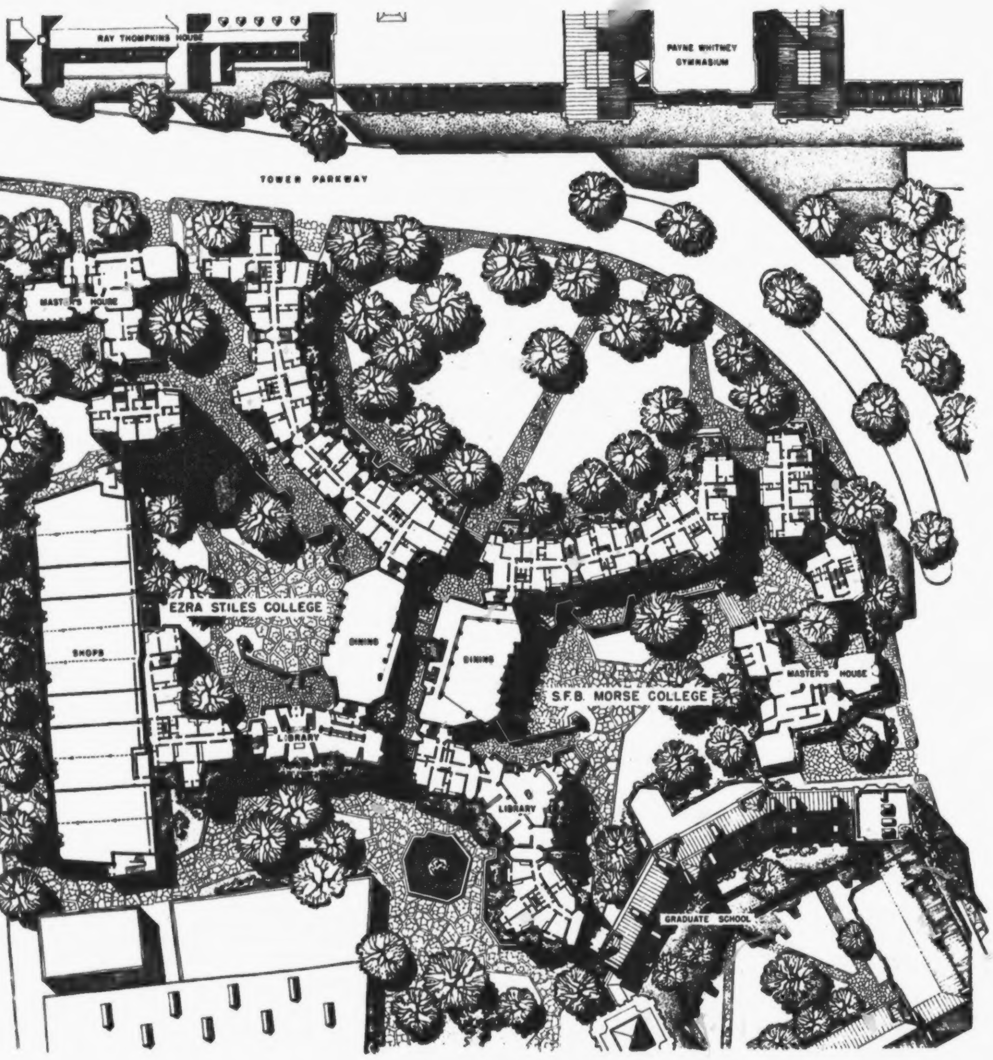
In any case, each room must include certain minimum furnishings.

### Wall-Hung Built-Ins For Storage, Sleep and Study



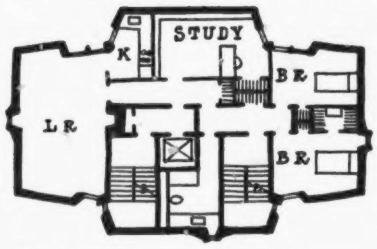
*The* ECS *(for Eames Contract Storage) system of modular built-ins hangs all the furnishings needed for a student space—bed, desk and storage—from the room wall. Components are mounted on steel brackets bolted to Unistrut channels so that they can easily be rearranged or moved altogether. They clear both floor and ceiling for easier cleaning, and better ventilation of the storage units. And they incorporate built-in lighting over desk and bed so that only general lighting is needed in the room itself. The study center (above) includes desk space with pencil drawer and small file basket, bookshelves, and a bulletin board. The storage units with their wire drawers and shelves are carefully planned for maximum capacity in a minimum of space. To save floor area, the fold-down bed with its 6-inch foam rubber mattress can be stored away when not in use, although it is doubtful whether this would happen in practice unless the built-ins are supplemented by extra lounge chairs*



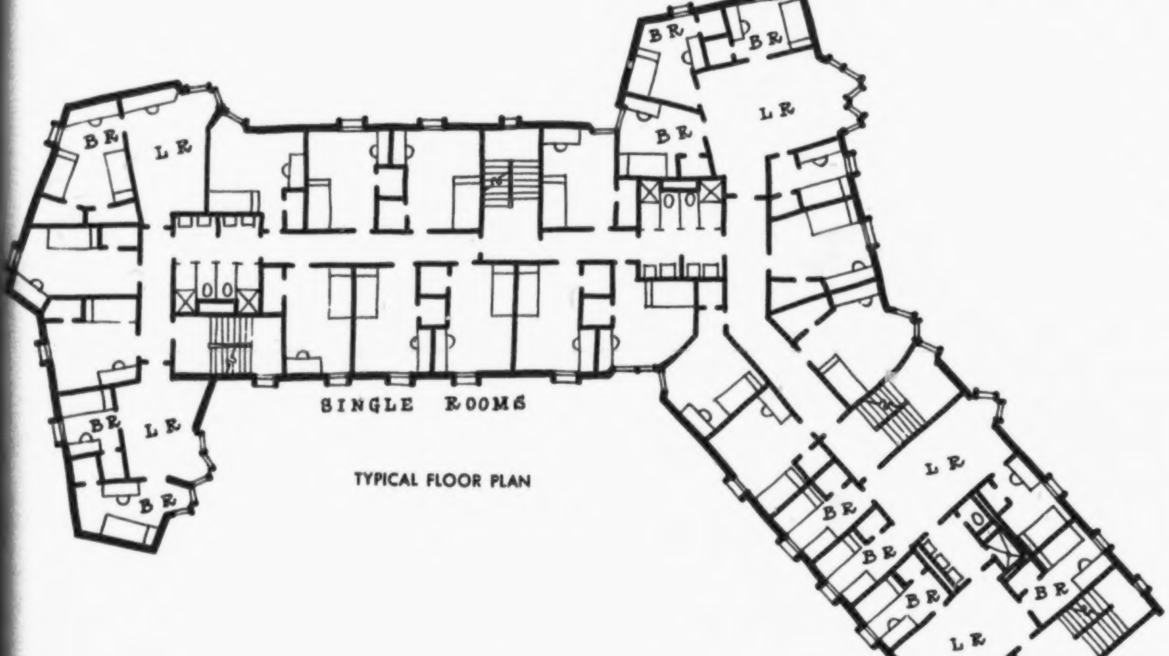

RAY THOMPKINS HOUSE
PAYNE WHITNEY GYMNASIUM
TOWER PARKWAY
MASTER'S HOUSE
EZRA STILES COLLEGE
SHOPS
DINING
DINING
LIBRARY
S.F.B. MORSE COLLEGE
MASTER'S HOUSE
LIBRARY
GRADUATE SCHOOL

### Polygonal Student Rooms

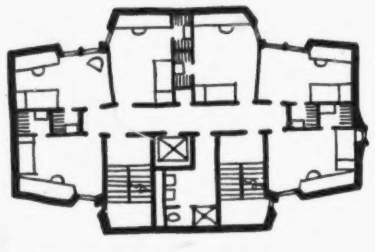
Ezra Stiles and Samuel F. B. Morse Colleges, Yale University. *The pointed breaking of the rule of the rectangle in the design for these two new colleges contributes a refreshing irregularity of size and shape to the student rooms. The main building group in each college is a half-crescent of four-story houses (below left) with two-, three-, and four-man suites as well as single rooms like the one shown on the page opposite. Other single rooms, and apartments for fellows, are in towers (floor plans below) reminiscent of those that characterize the older Yale colleges. Each college is completed by a library, dining hall, and master's house*


STUDY
K
L R
B R
B R

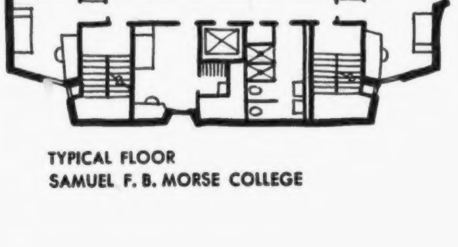
TYPICAL FLOOR


B R
L R
B R
B R
L R
B R
L R
B R
SINGLE ROOMS
B R
L R
B R
B R
B R
B R
B R
L R
B R

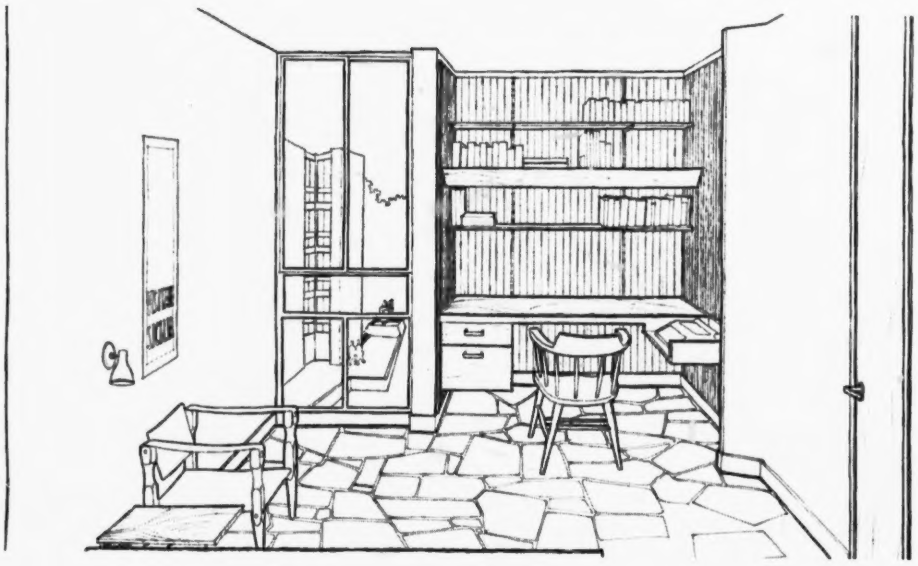
TYPICAL FLOOR PLAN



APARTMENT-FLOOR
EZRA STILES COLLEGE

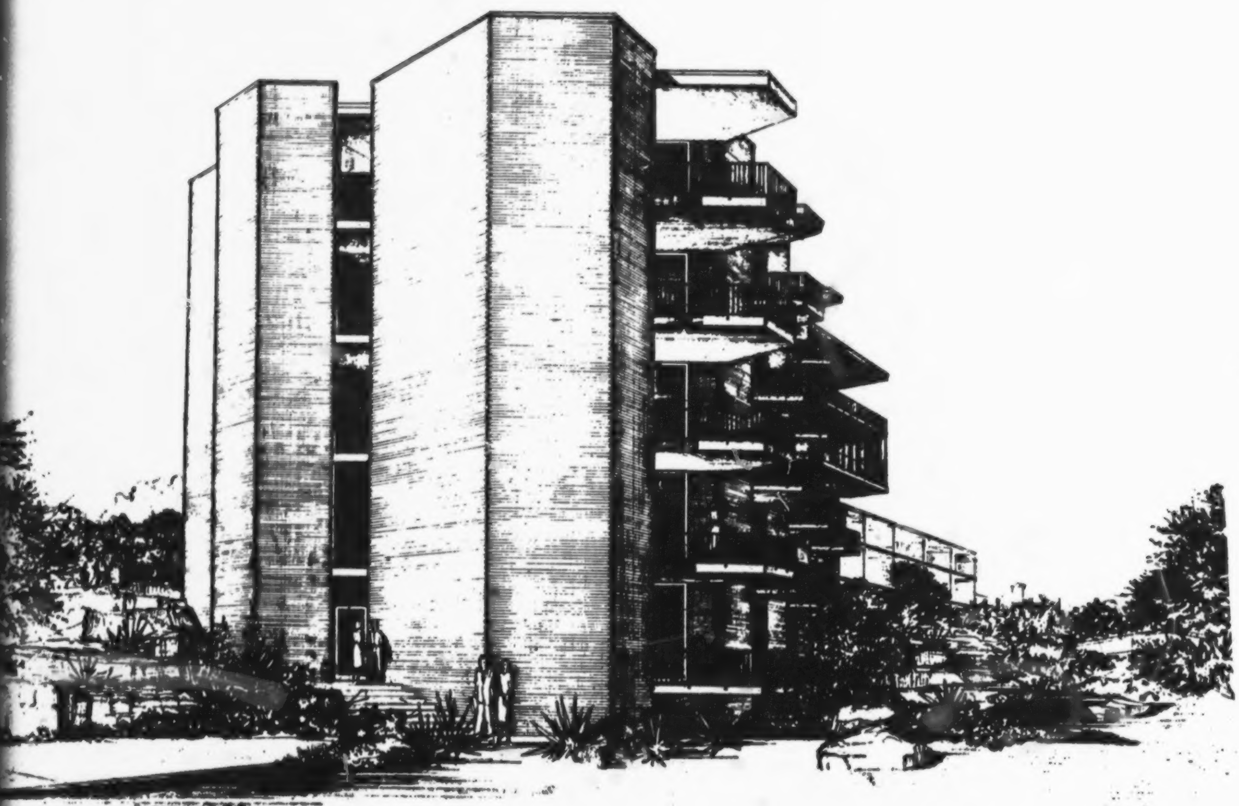


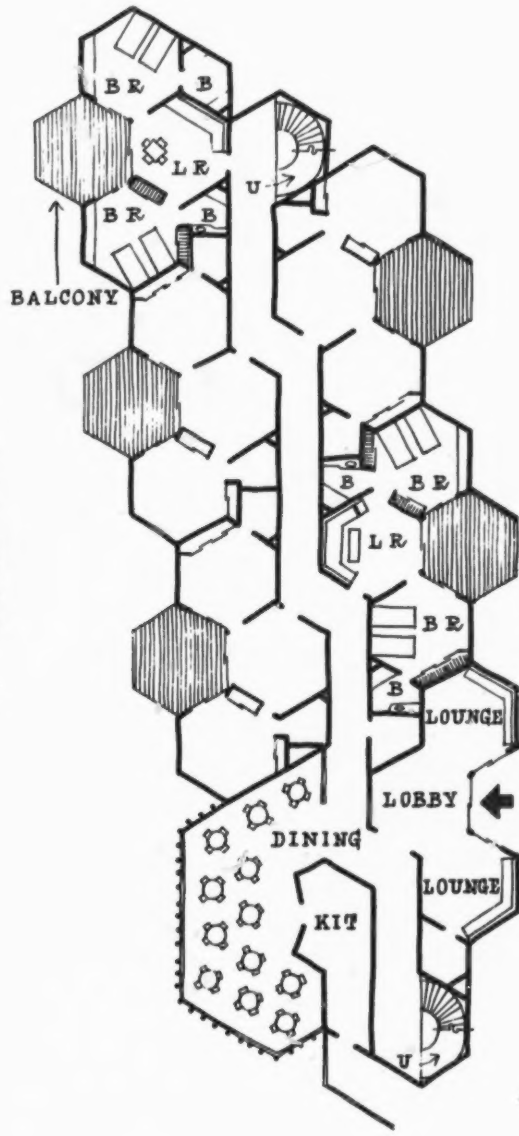
TYPICAL FLOOR
SAMUEL F. B. MORSE COLLEGE



These minimum furnishings include:

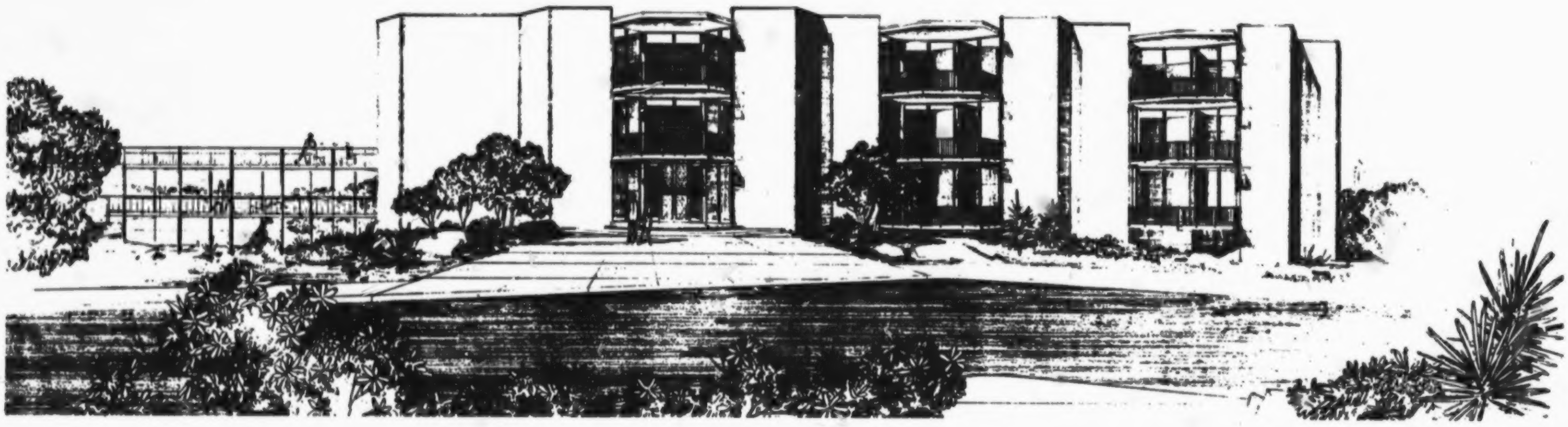
- *A single bed* for each student. Since students are taller than they used to be, beds should be 80 inches long and at least 36 inches wide. Double-deck bunks and other types of built-in beds are sometimes used to save space, but movable beds simplify housekeeping.
- *One closet for each student.* Both men and women now have more clothes, so four feet of hanging rod is a reasonable minimum. Five feet is better for women.
- *Additional storage space* in and over closets, and possibly over doors and under built-in beds.
- *A chest of drawers* for each student, arranged singly or doubly depending on room layout. These are often built-in as part of the closet wall to give an illusion of greater floor space.
- *Ample bookshelves,* conveniently located near study areas.
- *A study desk,* which ranks with the bed as essential equipment for each student unless carrels or other individual study facilities are provided elsewhere. Its top should be a minimum of 30 by 42 inches and, to help prevent eye fatigue, should be dull-finished in a color that will not contrast harshly with white paper. Desks are often built-in, which insures that the desk-top lighting provided will be used, but double desks that force students to face one another while studying should be avoided. Whatever its type or location, the desk should be adequate for the studying to be done. At one design school, for example, drafting table-desk combinations and accompanying storage facilities for work materials are substituted for the usual study desk.
- *The desk chair,* which should be comfortable and reasonably rugged. A slight extension of its back legs will prevent the back of the chair from rubbing against the wall.




BR
B
LR
U
BR
B
BALCONY
B
BR
LR
BR
B
LOUNGE
LOBBY
DINING
LOUNGE
KIT
U

### Honeycombed Suites

**Housing for Graduate Women, Trinity University.** *In another departure from the standard box, clustered hexagons form a honeycomb of four-girl suites that include a living room, two double bedrooms—each with bath, and a generous balcony. Advantages of the plan include a high ratio of livable space to total floor area, short jog corridors, and enough flexibility for student room floors to expand and contract in response to the vagaries of a multi-level site*



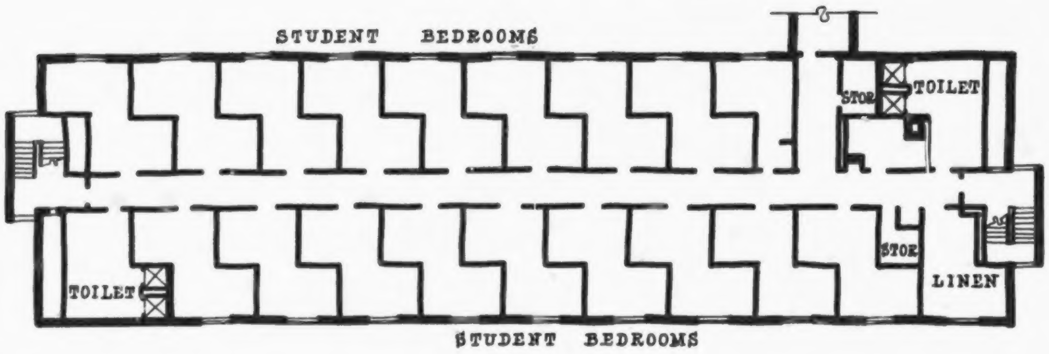
- *A lounge chair and occasional table, and a bedside table* for each bed are also desirable, as are such additional room furnishings and equipment as mirrors, tackboards, wastebaskets and telephones.

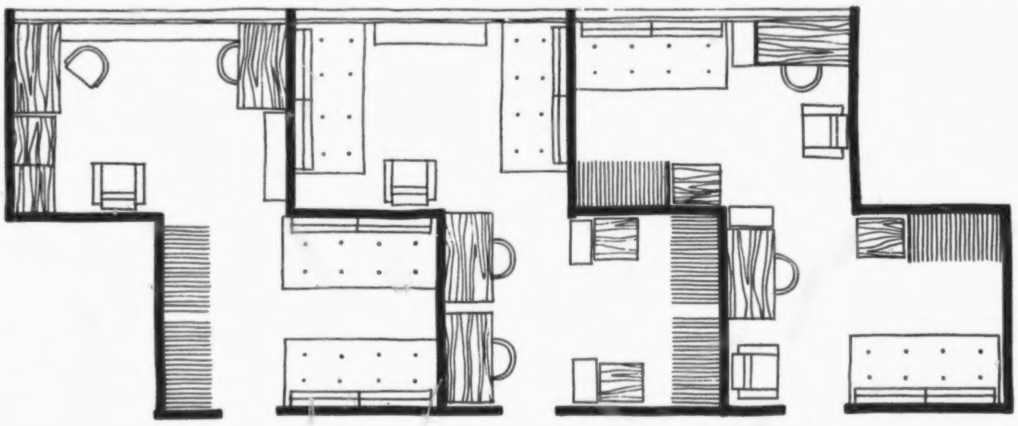
Other permanent features of the interior environment also have bearing on how well the student room performs its functions. Colors and surfaces, lighting, and mechanical equipment, as well as furnishings, should be planned to provide students with a comfortable, efficient environment—a workshop as well as a home.

It is important, too, that factual information should be the basis for selecting all of these. In its planning, for example, New York University has relied heavily upon the advice of personnel experienced in hotel operations to determine the true cost, long term as well as initial, of typical materials. When initial and continuing costs were assessed, along with over-all benefits, the conclusion was that many interior finish materials ordinarily considered too expensive actually pay off in reduced maintenance and increased income over a relatively short period, as well as providing maximum acoustical control and a pleasant residential atmosphere. As a result, plaster has been chosen over concrete block, carpeting over asphalt tile, and draperies over venetian blinds.

In addition to the general considerations mentioned earlier, the planning of student rooms demands attention to some special requirements.

*Windows,* for example, not only link the room to the outdoors, but their size and location may affect the organization of space within the room. In some instances, window size has been reduced considerably in order to cut heat loss, particularly when rooms are air conditioned, or because more interior wall space is needed.





**Non-Rectangular Rectangles**

**Residence Halls, University of Delaware.** *The proposals shown here seek to increase the livability of the traditional rectangular room by arranging it in new ways. The offset unit above is actually two rectangles that can be furnished for a variety of functional divisions, including "private" rooms for two students. The T unit below, a similar complex of rectangular forms, is also designed for maximum freedom in the use of the available space. Both units have the added advantage of combining well into groups of student rooms, or, with the omission of some walls, into suites*

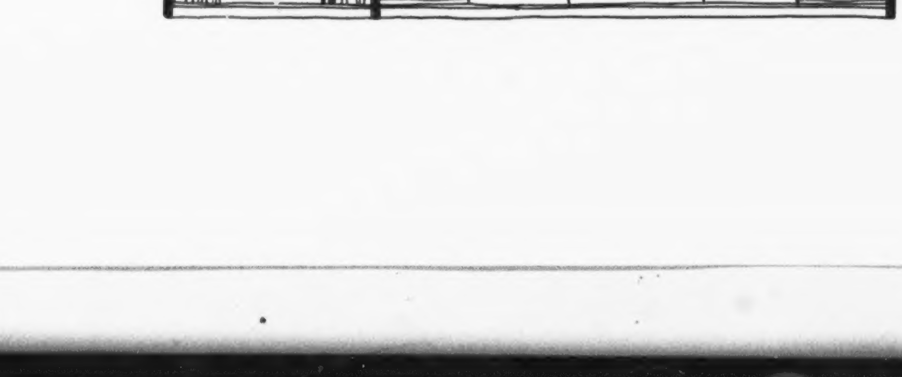


TABLE 1:

## DISTRIBUTION OF GROSS AREA BY HOUSING COMPONENT

| | MEN | | | | WOMEN | | | |
|---|---|---|---|---|---|---|---|---|
| Components | No. of Projects | Average | High | Low | No. of Projects | Average | High | Low |
| Study—Bedrooms | 105 | 50.5% | 63.7% | 26.7% | 106 | 46.1% | 71.6% | 24.4% |
| Toilet—Showers | 105 | 6.9 | 11.1 | 2.6 | 106 | 6.9 | 15.1 | 2.5 |
| Corridors—Stairs | 105 | 19.2 | 25.8 | .8 | 106 | 19.6 | 26.8 | 7.0 |
| Lounge—Recreation | 103 | 8.9 | 27.2 | 1.5 | 105 | 9.9 | 25.9 | 2.2 |
| Storage—Service—Laundry | 103 | 7.7 | 17.4 | 1.0 | 105 | 8.9 | 17.8 | 1.2 |
| Dining—Kitchen | 28 | 13.2 | 34.7 | 1.5 | 43 | 13.3 | 28.8 | 1.5 |
| Staff Apartments | 17 | 2.4 | 5.2 | .3 | 20 | 3.3 | 9.7 | 1.4 |
| Other | 87 | 3.7 | 16.1 | .1 | 92 | 3.9 | 26.8 | .3 |

*Note: The number of projects for each component varies because data were not uniformly prepared or available. For this reason, percentages do not total 100 per cent; they can be compared only by individual component. Basic information, collected through the courtesy of the Community Facilities Administration, covers 211 projects constructed or planned, 1955-60.*

TABLE 2:

## GROSS AREA PER STUDENT BY HOUSING COMPONENT

| | MEN | | | | WOMEN | | | |
|---|---|---|---|---|---|---|---|---|
| | No. of Projects | Square Feet | | | No. of Projects | Square Feet | | |
| Components | | Average | High | Low | | Average | High | Low |
| Study—Bedrooms | 105 | 106.3 | 148.6 | 72.3 | 97 | 112.2 | 139.7 | 83.7 |
| Toilet—Showers | 104 | 14.9 | 28.2 | 6.5 | 97 | 15.7 | 31.4 | 6.2 |
| Corridors—Stairs | 76 | 38.0 | 61.5 | 7.8 | 63 | 47.9 | 83.0 | 23.4 |
| Lounge—Recreation | 96 | 19.3 | 55.3 | 3.5 | 95 | 23.5 | 79.8 | 2.9 |
| Storage—Service—Laundry | 67 | 15.8 | 46.7 | 2.6 | 60 | 22.3 | 72.1 | 6.9 |
| Dining—Kitchen | 26 | 23.6 | 40.0 | 14.2 | 39 | 28.5 | 112.8 | 1.3 |
| Staff Apartments | 14 | 5.1 | 12.9 | 1.1 | 15 | 7.7 | 25.0 | 3.3 |
| Other | 91 | 34.9 | 180.8 | .7 | 55 | 16.7 | 166.1 | 2.4 |
| TOTAL | 230 | 212.7 | 383.9 | 177.5 | 180 | 253.4 | 416.6 | 172.7 |

*Note: The number of projects for each component varies because data were not uniformly prepared or available. For this reason, square footage figures can only be compared by individual component; they do not add up to the total. Information on total space allocation was more readily available—as the number of projects shows. Basic information was collected through the assistance of the Community Facilities Administration and covers projects constructed or planned, 1955-60.*

At the other extreme windows have been increased in size until they become glass walls. Visual access to a distant view has a practical as well as a psychological value since changing the eye focus rests eye muscles, but large glass areas may create glare problems in addition to problems of heat transmission. The question of window size needs study in relation to such factors as local climate, orientation of the building, and protection by foliage outdoors and draperies or blinds indoors.

Draperies have the acoustic and esthetic advantages already noted, but venetian blinds block vision from outside and reduce glare, without cutting off ventilation. Some schools install blinds and provide hardware so that students may hang their own draperies if they wish.

Whatever the size and coverings for windows, not all the glass area need be operable sash. Fixed sash are less expensive, and ventilation is often more satisfactory if movable sash are placed only where they will exhaust a maximum of room air and admit fresh air, without drafts.

*Doors* should be higher than is common in private houses, preferably at least seven feet, and wide enough for furniture to be moved in and out without damage. To reduce noise transmission, they should be solid and tightly fitted. For the same reason, transoms and grilles should be omitted altogether and adequate ventilation provided by other means.

*Materials and finishes* should be chosen for noise control and durability as well as appearance. Plaster walls are usually more satisfactory than concrete block, since concrete block is seldom laid up with full mortar joints and hence permits excessive sound transmission. Moreover, plaster usually requires repainting less frequently than concrete block. Ceilings are usually plastered for similar reasons, but sometimes they are surfaced with incombustible sound-absorbing materials.

To minimize noise due to impact, floors should be resilient. Asphalt tile is commonly used, although maintenance and replacement costs tend to overcome its initial cost advantage. Carpeting, though not commonly used in student rooms, has a distinct edge so far as noise control is concerned. In addition, some yarns and weaves now used in carpeting substantially reduce cleaning and replacement problems.

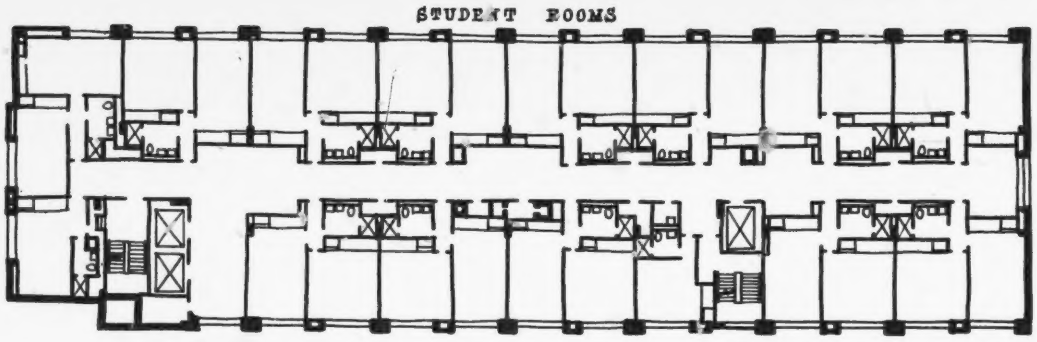
*Mechanical and electrical services.* Since lavatories are seldom included because of cost considerations, there is no need for plumbing within student rooms. Nor does the heating system directly affect their design, although the location of heat sources (radiators, convectors, and so forth) requires careful study in relation to the probable placement of desks, beds and other furnishings. Enough electrical convenience outlets should be provided for such personal needs as electric razors, radios, and portable lamps for local lighting, and for such increasingly common educational equipment as record players and tape recorders. The electrical service to the building may advantageously be high voltage, but 110–120v, AC, service is required for student rooms.

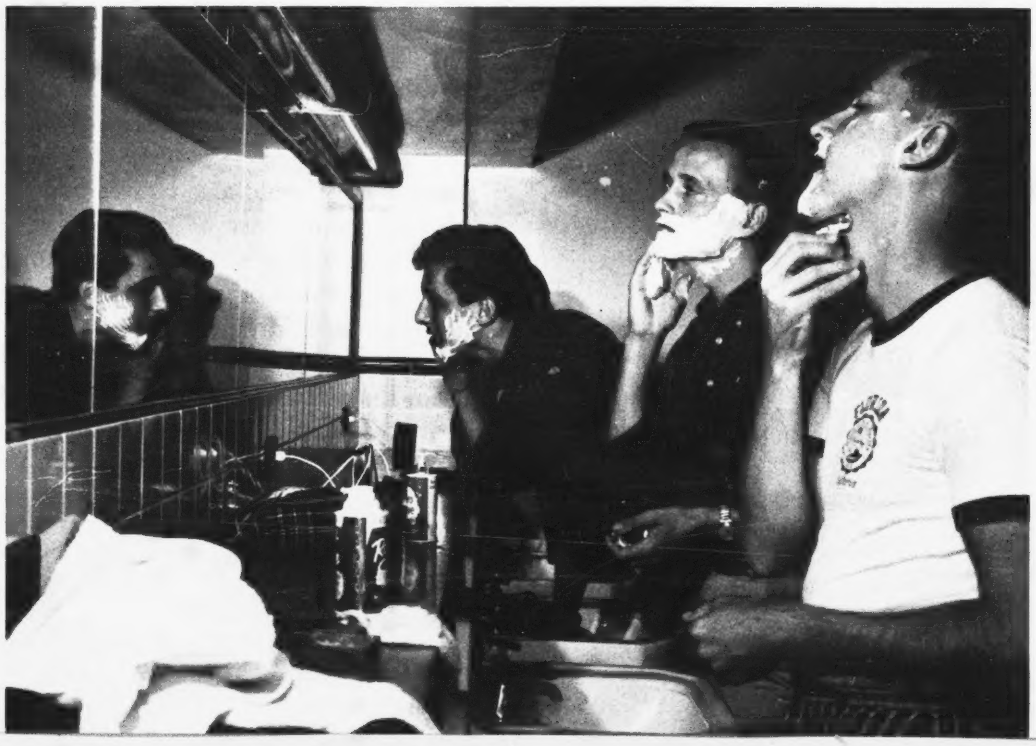
## Bathrooms

*Arrangement of bathrooms* depends on many factors. Community bathrooms have long been typical for single student housing, in some instances with lavatories, showers, and toilets placed in separate but connected rooms. Two community bathrooms, or one which can be subdivided, are sometimes planned so that student rooms can be assigned on a hotel basis to men, women, and

**Bathroom Buffers**

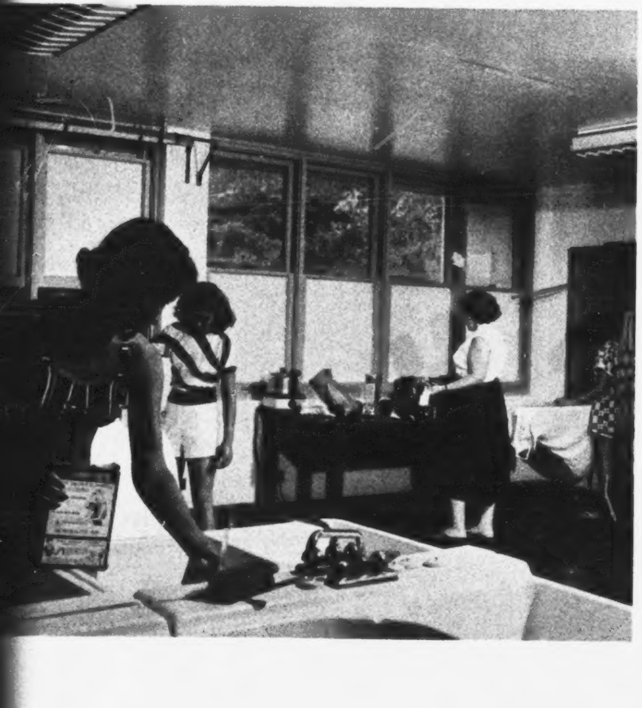
*Although community baths divided by use, as in these photos, are still the rule, many colleges are experimenting with semi-private baths, which are cheaper to maintain and more attractive to summer conference groups. Some arrange such baths along the corridors so that they also buffer noise, as at* COLUMBIA UNIVERSITY'S FERRIS BOOTH HALL *(plan below)*





### Letters and Laundry

*Above: A prime problem in planning mail distribution facilities is avoiding traffic jams around boxes. Below: Laundry rooms, especially in women's dorms, often include equipment for ironing and sewing, as well as washing and drying facilities*



couples attending summer conferences. This, however, is only a partial solution of the problem of providing good accommodations for non-student residents. The most serious difficulty with community baths is the high maintenance and housekeeping cost arising from the fact that, since such facilities are the responsibility of no particular student or group of students, frequent cleaning by the janitorial staff is required.

For these and other reasons, connecting bathrooms serving two rooms or a suite are increasingly common. Some examples indicate that, when well planned, they consume no more floor area than community baths, and that higher fixture costs may be offset by reduced operating costs. Another advantage is increased income resulting from the greater attraction for conference groups of rooms with connecting, or private, baths. Even so, private baths are still uncommon.

*Materials and finishes* for bathrooms demand special attention because of the presence of water, vapor, and steam. Floor waterproofing in shower areas requires particular care in design, and floor drains are essential. Hard ceramic tile for floors and glazed tile for walls, preferably floor to ceiling instead of merely for wainscots and splashes, are practical from the point of view of durability and maintenance. Ceiling materials also should be moisture resistant. Marble, or other non-corroding materials, are preferred for toilet and shower walls.

*Equipment* should also be selected for durability and ease of maintenance: wall-hung fixtures and ceiling-hung corrosion-resistant partitions pay housekeeping dividends. Ventilation must be adequate. If forced-air is used, inside baths are acceptable and open windows, which are often a source of disturbing noise, can be eliminated. In many states, currently recommended use-ratios for fixtures in community baths are liberal enough to be reduced. In planning baths, care should be taken to avoid such common construction defects as leaking shower pans and inaccessible pipe chases. Such minor items of equipment as soap dishes in showers, hanging hooks or rods for clothing, towel rods, door bumpers, and shelves for toilet articles should not be forgotten. All such equipment is preferably built in.

Both connecting baths and private baths, as well as bathrooms in apartments that are likely to be assigned to married students, should have tub-shower combinations. In the former case, they may increase rentability of rooms during the non-academic months, and in the latter, they are more convenient for bathing children. They may also be cheaper than stalls, and will eliminate shower pans.

### Service and Housekeeping Needs

*Communications systems* vary all the way from centrally located pay telephones to direct-line phones in all student rooms. Voice or buzzer systems between the information desk and student rooms are often used to announce telephone calls or visitors, or this may be done with direct-line corridor phones operated through a central switchboard, plus a signaling system from the information desk. In any event, provision should be made so that individual students may receive phone calls without other students' being annoyed by buzzers, shouting, or public address systems.

*Mail distribution* requires locked boxes, space for sorting, and ample circulation around the boxes. Since circulation is often neglected in planning, congestion is common. A dead-end corridor or alcove usually proves unsatisfactory. Boxes are ordinarily located near the information office.

*Laundries* with coin-operated washers and dryers, which are in demand for men as well as women, are usually placed in basements or adjacent to groups of student rooms. In addition, drip-dry alcoves are sometimes included in men's community baths, and laundries for women are often supplemented with a special room for ironing and sewing. The most common problems with laundry facilities are noise, water damage, misuse of equipment, and poor location.

*Trash disposal,* a need too often neglected, works best when the disposal point is convenient to groups of student rooms. One system uses chutes opening from utility rooms on the several floors and emptying into a collection room below. Since maintenance, soot, and smoke become problems if the accumulation is incinerated in the collection room, it is better to have trash trucked elsewhere for disposal. In this case, the trash room must be accessible to trucks.

Automatic sprinklers are desirable in both the trash room and in the chutes. The floors and walls of the trash room should be easy to clean, and a floor drain is needed so that the room may be hosed out.

*Student storage rooms* are necessary for bulky luggage in both men's and women's residences, and for evening dresses and off-season storage in women's halls. Sometimes such areas are provided on each floor, sometimes in the basement or other central location. Providing comparable storage space within student rooms may raise area requirements excessively.

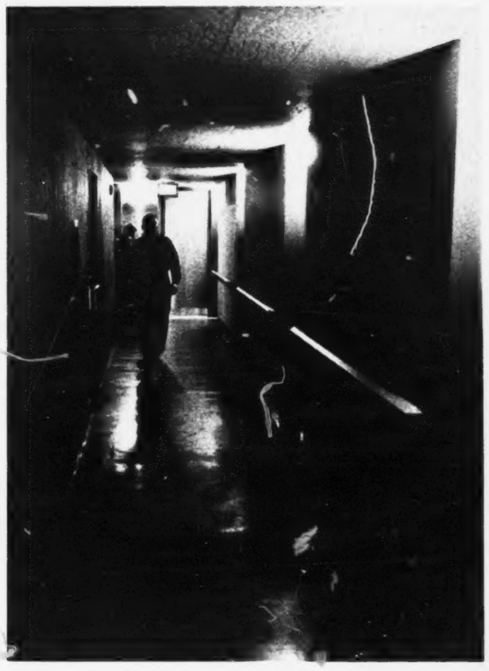
*Housekeeping facilities.* To facilitate supervision and reduce labor costs, storage and issue rooms should be consolidated in an accessible central location. Such rooms are always needed for housekeeping equipment and supplies, and they may be needed for linen if bed linen and towels are included in the rental charge. If exchanging soiled for clean linens is a student duty, ready access to the issue room is necessary for students as well as housekeepers.

Janitors' closets for each floor or group of rooms are desirable for storing equipment and supplies used daily. A service sink is needed in each, and moisture-resistant, easily cleaned walls and floor are essential.

Lunch, locker, and shower rooms are desirable for housekeeping and food service personnel, but few universities in this country provide living quarters for such employees.

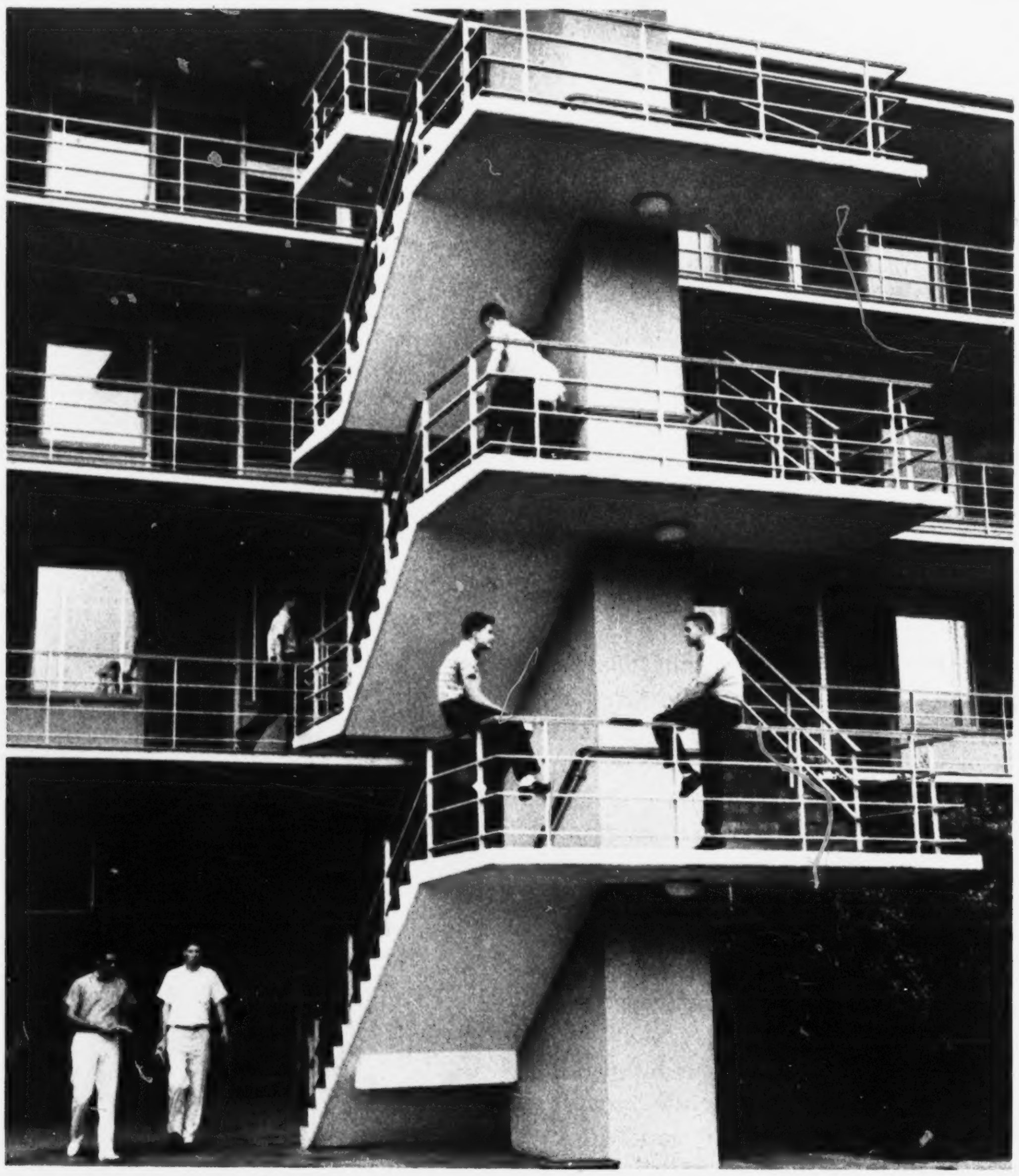
*Administrative facilities* such as staff quarters and offices should provide good living and working conditions. Actually, the living-in requirement, which reduces to zero any chance for personal privacy or escape from a demanding job, is on its way out. A compromise is to locate staff living quarters as far from building traffic centers as possible or to remove them from the building altogether. The staff apartment or house usually includes a combination living-dining room, kitchen or kitchenette, bedroom, and bath. If a family is to occupy the quarters, more bedrooms are needed, and the facility is best separated from the student community. The unmarried graduate or senior student with major staff responsibilities should have a suite with private bath. For other student staff, a single room offers enough privacy for occasional interviews and informal counseling.

In addition, there should be office-conference rooms equipped and decorated to provide an informal setting for interviews and discussions with students. These rooms should be in a central location, as should the information desk, which may vary from a simple piece of furniture to an elaborate facility with a switchboard.



**Circulation Indoors**

*Above: The potential monotony of this corridor is sidestepped by recessing room doors and painting them in vivid colors. Single-loading (student rooms are at right, a service core at left), resilient flooring, and an acoustic ceiling help cut noise. Below: Although this double-loaded corridor traverses the building from end to end—a distance of 150 feet, its resemblance to a tunnel and its potential for carrying noise are reduced by its gentle curve*



**Circulation Outdoors**

*Above: Outdoor corridors and stairs, appropriate to Tulane's Gulf Coast climate and tradition, are also practical and economical. With stairs moved outside, identical structural bays could be repeated throughout the upper floors. With galleries replacing inside corridors, student rooms could be backed up against a consolidated utility core, reducing the requirements for enclosed space. Below: A series of concrete "lily pads" double as landings for outdoor stairs and as stages for outdoor pageantry. The stairs themselves provide a direct exit to the ground from each floor of the building, eliminating interior fire stairs*

*Small infirmaries* are sometimes included in residence halls when there is no separate infirmary, but these should not be considered hospitals. College health officers should be consulted before deciding what types of health services should be offered.

### Spaces for Circulation

There are two fundamental problems in all types of circulation areas: obtaining maximum building efficiency, and maintaining a pleasant residential atmosphere without either jeopardizing safety or increasing maintenance costs.

Valuable floor area is often squandered on circulation, although thorough study at the preliminary planning stage can usually reduce such wastage. The shorter and more direct the corridors, the greater the proportion of useful floor area, and the more efficient the building plan. Corridor width depends on the amount of traffic expected. Where there will be little traffic, a five-foot width is a reasonable minimum. Four feet is too narrow. Still wider corridors are needed where circulation routes converge and for access to public areas.

*Safety.* Corridors and stair wells are fire exits as well as circulation routes. Therefore they should contain no combustible materials; they should offer at least two fire-safe routes from all rooms to the ground outdoors; they should be well, though not necessarily brilliantly, lighted; and they should not contain such hazards as projecting vending machines and drinking fountains, or door swings. They should never lead to a dead-end.

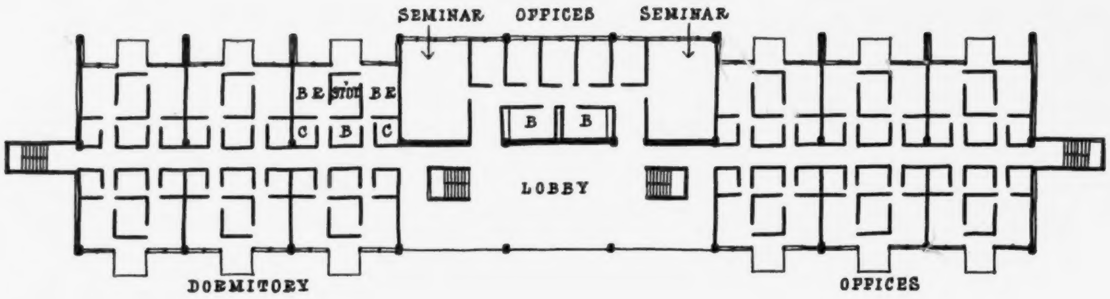
Stair wells should be enclosed because smoke and gases from fires have proved to cause more fatalities than flame. For this purpose, self-closing doors with an appropriate fire rating (one hour is usually sufficient) should be provided. The doors should be equipped with panic hardware.

*Surface finishes and treatments.* Where traffic is relatively light, asphalt and vinyl tile have commonly been used for corridor floors, although, as mentioned before, the cost of maintaining and replacing asphalt tile is likely to more than offset its low initial cost. Rubber tile has been found too slippery unless carefully maintained. For heavy traffic routes like entries and stair wells, terrazzo or ceramic tile may prove to be better. Carpet has seldom been used in circulation areas, despite its acoustic and other advantages. Stair landings, and treads, of whatever material, should be nonskid, and door saddles should be eliminated wherever possible to reduce the danger of tripping and facilitate furniture movement.

Wall finishes should be chosen with the understanding that they will inevitably be scuffed, and they should be easy to clean, particularly in stair wells where students are apt to substitute the wall for the hand rail. Durable tile or plastic wainscots, at least shoulder-high, may be the most practical solution. Ceilings and upper walls should also be durable and easily maintained. They are the most suitable location for noncombustible sound-absorbing surfacings.

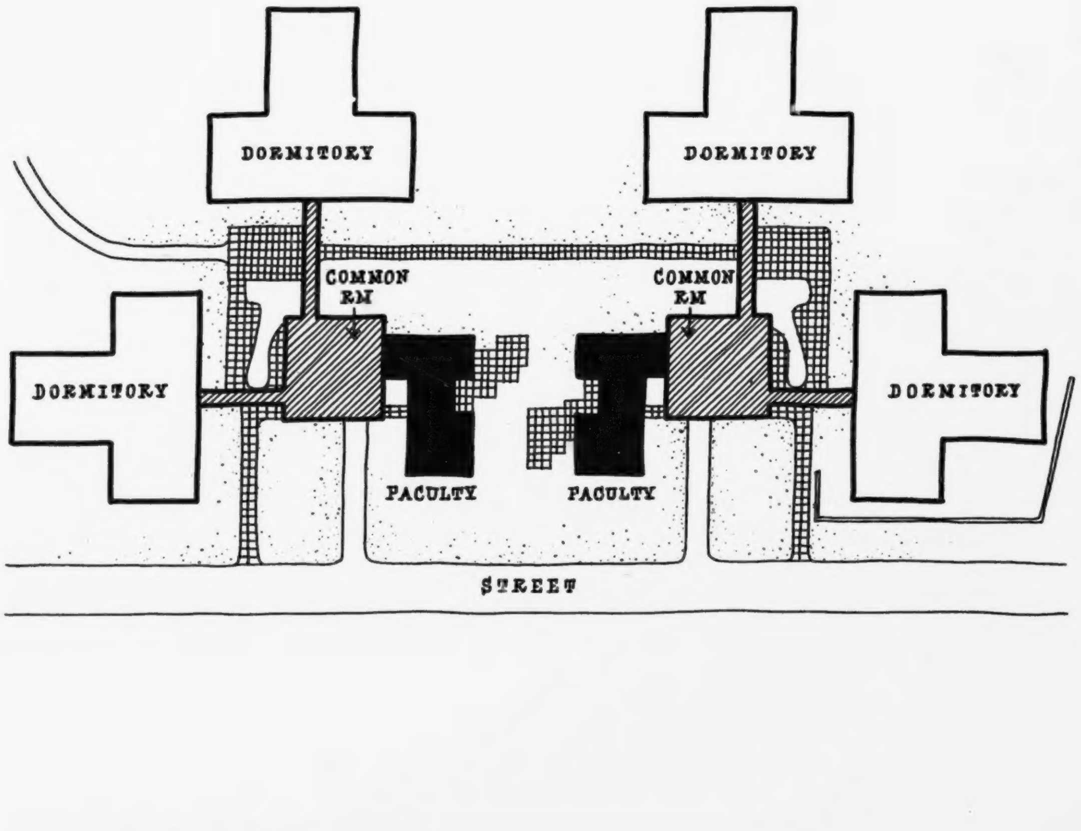
Since all surface finishes must be chosen to withstand hard usage, color and lighting are the principal means of achieving an appropriate atmosphere in circulation areas—that is, an effect neither too monotonous and institutional, nor too likely to stimulate students to the point of encouraging noise. In some cases, low-relief sculpture, murals, and paintings have been used to advantage, especially in the more public areas.

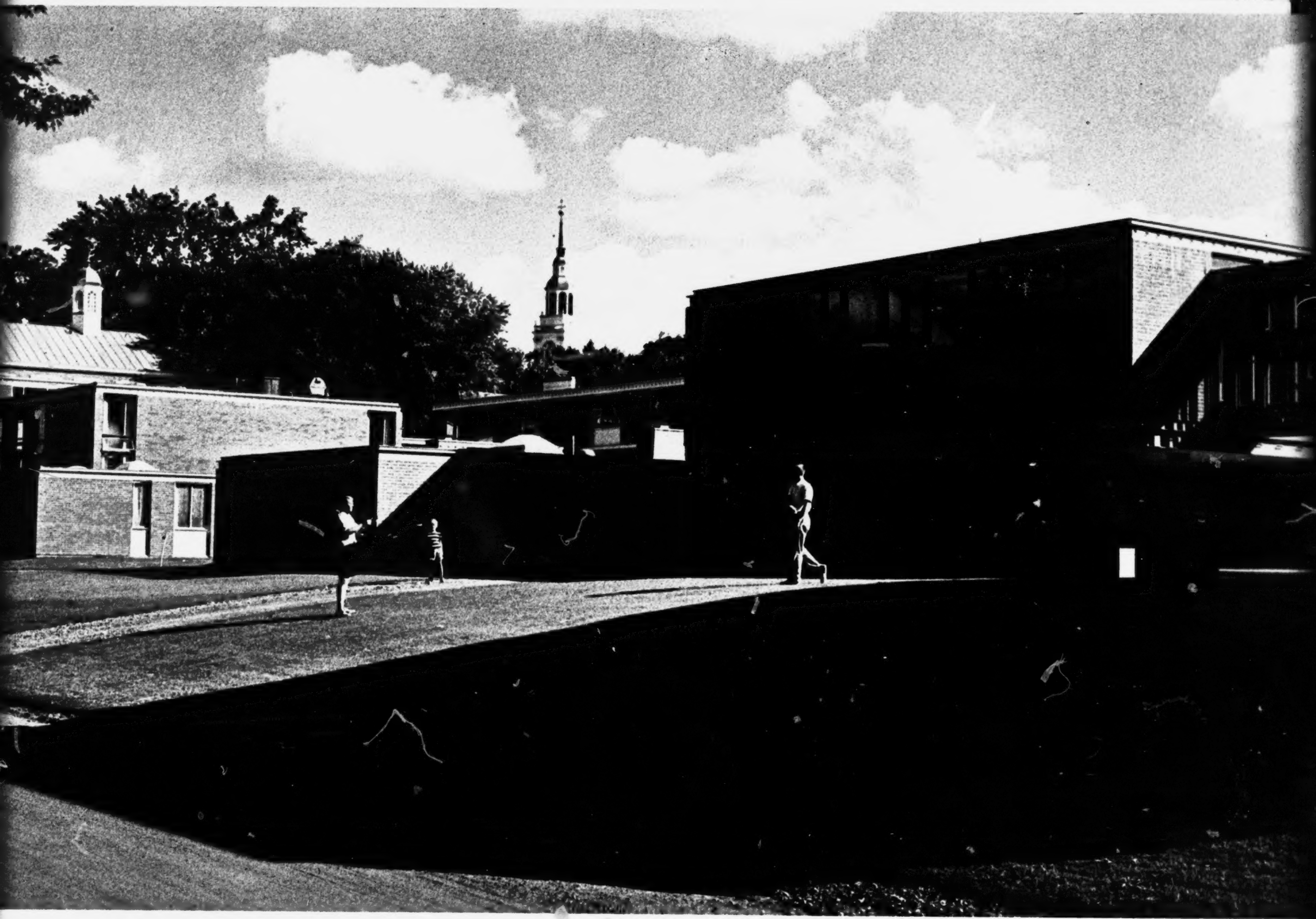
*Typical equipment* in circulation areas includes telephones, drinking fountains, fire-safety devices, bulletin boards at strategic locations, and, occasionally, full-length mirrors.

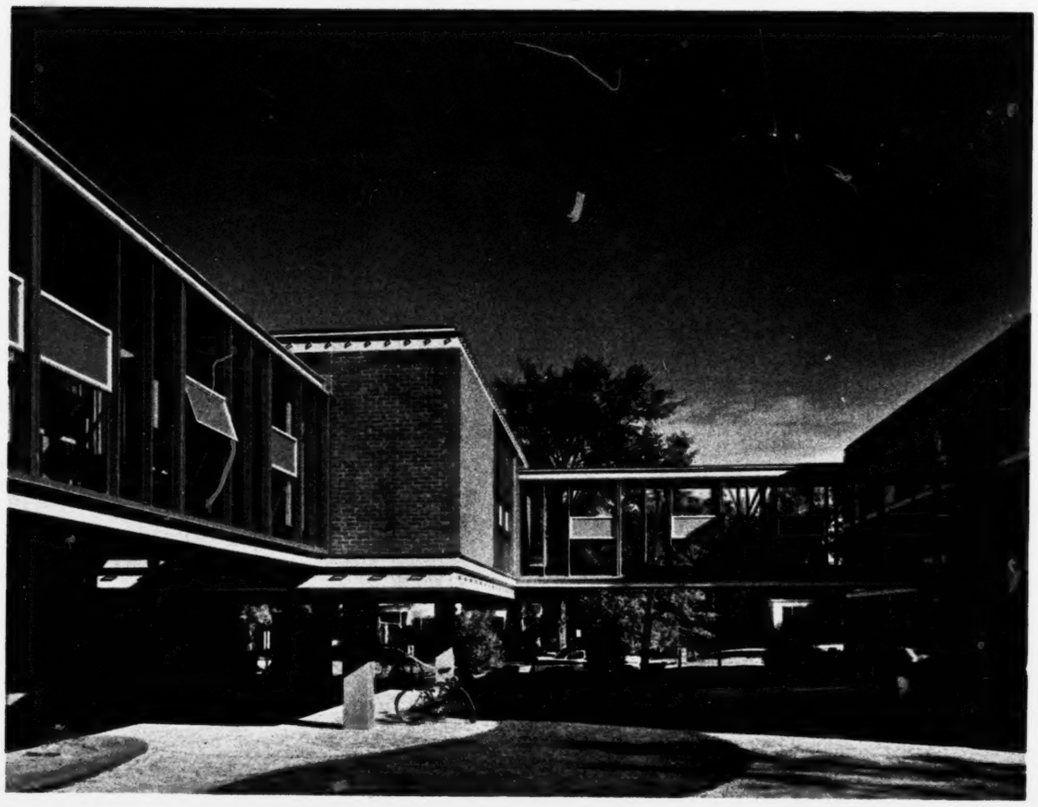


**Where Teacher Meets Student**

Dormitory-Office Building, Proposed University of Boca Raton. *(Above) This hybrid building grew out of the need to provide good minimum facilities for the debut of a new university, while allowing flexibility for its subsequent growth. One wing, accordingly, contains living and study space for resident students. Identical spaces in the other wing are used as faculty offices, and as study rooms for commuting students. The planners believe this close proximity between residents, commuters and faculty to be desirable for all, although only the furnishings need be changed to convert the dormitory to office space and vice versa. The wings are linked by additional faculty offices and by seminar rooms that double as lounges*







## Separate but Available: The Resident Teacher

**Choate Road Dormitories, Dartmouth College.** *The two building groups shown in the plot plan at the bottom of the preceding page represent a modified version of a well-worn practice among many private colleges —the inclusion in student housing projects of living quarters for faculty advisors. In this case, however, the quarters are not the usual apartment or suite in the residence hall proper, but a separate, family-size (3-bedroom) house that nestles in the shadow of a raised common room linked to the nearby halls by glass-enclosed bridges. The ground floor entrance to the common room also gives students outside access to the faculty advisor's study, so that the rest of his home remains his castle. The faculty residence thus provides both adequate privacy and generous living space, making the job of on-the-spot advisor attractive to family men as well as to bachelors*

## THE LEARNING ENVIRONMENT

On many campuses, the dormitory could as easily be a YMCA or a residence hotel for young businesswomen. In its pristine lobby, there is nothing to betray that it is a part of an educational institution except the age of the residents and the textbooks they carry.

No one would argue that a productive academic environment can be created merely by strewing books about the lobby, but the physical presence of a library, study spaces, and meeting rooms can serve as a potent reminder of the purpose around which student life should center.

### Why Educational Facilities?

There are at least three important reasons for including such educational facilities in housing. The first is to directly support the curriculum by relieving the twin problems of lack of time for presenting important subject matter and limitations in numbers of courses that can be taken. For example, well-equipped residence hall libraries and informal discussions of good books might supplement or even replace a literature survey course. Foreign language tables in dining rooms may provide better conversational practice than is possible in classrooms. Planned record programs can bring music appreciation out of the classroom and into the student's daily life.

In-residence educational facilities can also support the college's teaching philosophy and methods. If the college strongly emphasizes independent study—employing, for instance, large lecture courses followed by seminars and tutorials—students are apt to do most of their work in their living quarters. Residence halls should then include informal meeting rooms for faculty-conducted seminars and tutorials in addition to the usual study facilities in the students' rooms and elsewhere. Colleges are also beginning to use more mechanical and electronic teaching devices—telephone amplifiers, record players, tape recorders, learning machines, radios, and television—many of which are inexpensive or portable enough to be included in residences.

Still another purpose of educational facilities in housing is broadly cultural. If today's student is, as we have said, prone to demand and pursue practical, job-oriented courses, his grounding in the liberal arts is apt to suffer. Housing can be a subtle and effective means of filling in educational gaps by exposing the student to literature, music, painting, sculpture, and even architecture—at least that represented by the building itself. Informal discussions and impromptu bull sessions in congenial surroundings may be as valuable as faculty-led seminars as forums for testing new ideas and sharpening forensic skills.

In planning housing-related educational facilities, it should be remembered that these three roles are by no means mutually exclusive. Each, in fact, tends to reinforce the others. Similarly, space and equipment needed for one are often useful for the others, or can be made so with a little care in planning and design. Except in the case of highly specialized equipment (as for mechanical language instruction) or complex environmental requirements (special ventilation, lighting, or acoustical control), it may well be a mistake to restrict a facility to a single purpose or use.

Some of the educational facilities that may be included in housing are:

Libraries
- For browsing
- For research
- For study

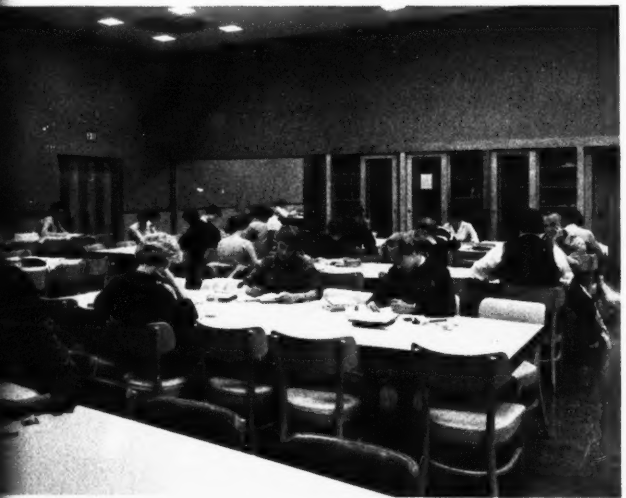
Meeting rooms
- For seminars
- For tutorials
- For informal and formal discussions, including meetings for class

*"The comradeships of undergraduates will never breed the spirit of learning. It must include the older men, the teachers.... So long as instruction and life do not merge in our colleges, so long as what the undergraduates do and what they are taught occupy two separate air-tight compartments in their consciousness, so long will the college be ineffectual."*

Woodrow Wilson
*"The Spirit of Learning"*

**A Bow to Books**

*Many schools have long considered well-stocked libraries like the one shown above a sine qua non of good housing for budding scholars. More schools, including public institutions, are now following suit. Some do so by incorporating small reference libraries in project study rooms, as in the example shown below*



credit, voluntary meetings related to regular courses but not for credit, or meetings on topics not related to the curriculum

· For lectures, ranging from a planned series to an occasional informal talk, and for formal classes or remedial reading sessions

· For music programs

Independent study facilities

· In student rooms

· In special study rooms and lounges

· In individual carrels

Conference spaces

· For informal talks with faculty members

· For assistance with study problems

· For educational or vocational guidance

Display and exhibit space

### Students' Study Requirements

All of these facilities are desirable; one—space for individual study—is essential. Yet surprisingly little is known about students' study habits and about the kinds of spaces in which they work most effectively.

Recently a committee functioning under the auspices of The Committee for New College attempted to find out by asking the students themselves. Although the committee's exploration was limited to students and study spaces at the sponsoring institutions (Amherst, Mount Holyoke, and Smith Colleges, and the University of Massachusetts), the findings documented in its report, *Student Reactions to Study Facilities,* have general relevance.

From the point of view of those concerned with housing, perhaps the most significant finding that came to light is that from 55 to 60 per cent of all studying is done in residence halls—and four-fifths of the studying done there takes place in the students' rooms. This is a manifestation of what seems to be a natural law: students' use and approval of study spaces increases as the size of the space decreases. It also drives home the need for adequate study facilities within the students' rooms.

An interesting sidelight on study conditions in student rooms is the advantage of double rooms. Students who have one roommate do more than half of their studying in their rooms; those in single rooms, slightly less; and those with more than one roommate, substantially less.

Even in residence halls where double rooms predominate, some additional study space outside the room is needed for the student who wishes to study when his roommate wants to sleep, to spread out papers that would engulf his desk, or to type late. How much space is needed depends on a number of variables, but there probably should be enough to take care of 10 to 20 per cent of residence hall capacity. More will be needed if most students have more than one roommate.

If the building is large enough, the common space allocated for study should be divided into two or more small rooms. If large rooms must be used, individual carrels are advisable: wide open spaces simply are not used for studying. It is probably for this reason that spaces like dining halls, which would seem to be appropriate because they stand empty during most of the day, rarely help to supplement study facilities. Another factor seems to be the students' tendency to be dog-in-the-mangerish about their study spaces. Once they have established squatter's rights in even so large a room as a dining hall or classroom, they discourage the intrusion of other students.

Lobbies, lounges, and other social rooms are not used for study either, but in this case the drawbacks are such environmental factors as inappropriate furniture and lighting, and distractions from non-studiers.

One of the more significant variables affecting the use of residence halls for study is their distance from the library. Halls near libraries are most used for study because reference materials can easily be taken to students' quarters. Students whose residence halls are distant from the library do more studying in the library itself.

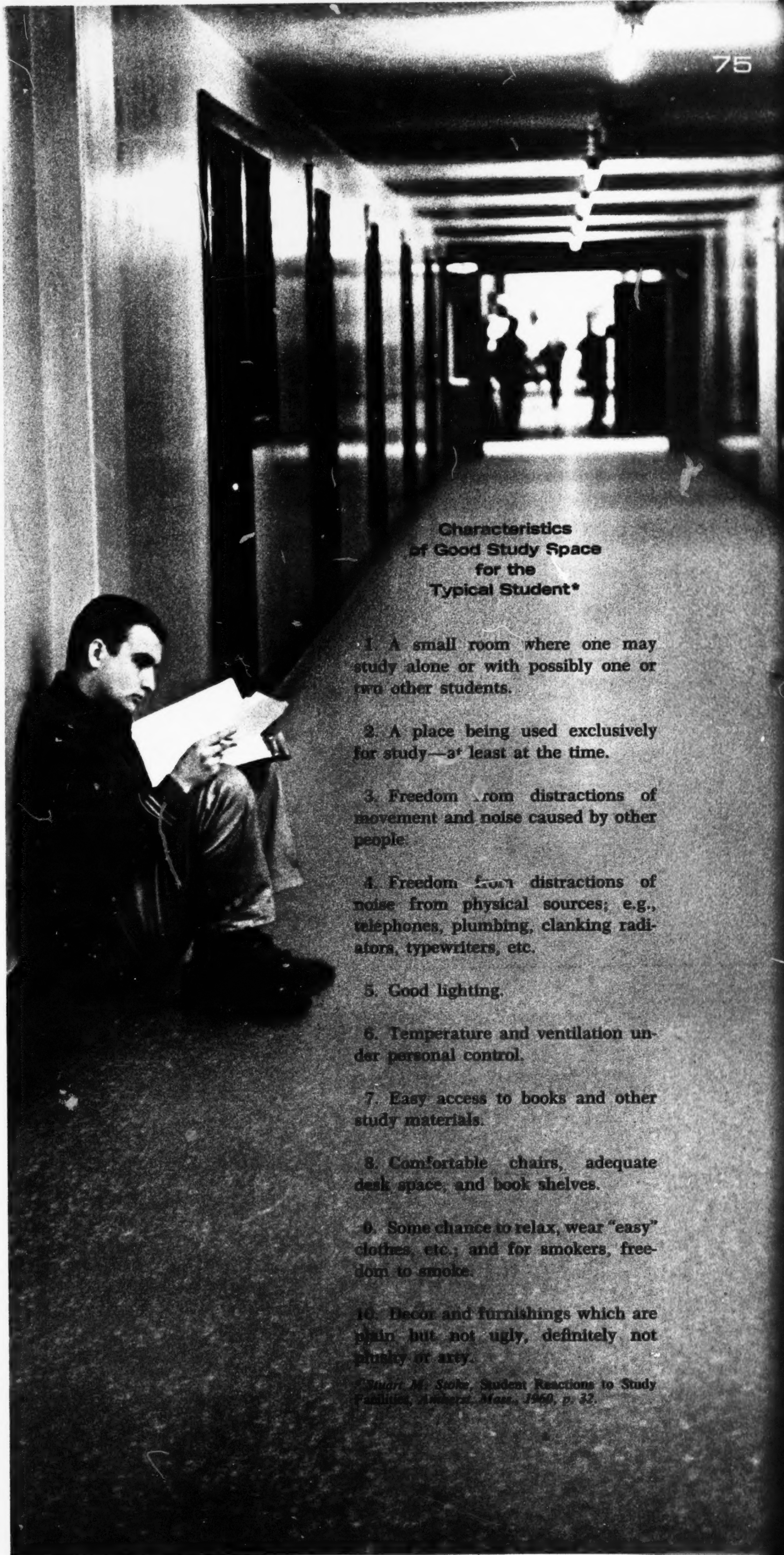
According to the New College report, students are more sensitive to the physical environment than might perhaps be expected. Their most common complaint about study facilities, and doubtless one that contributes to their preferences for small spaces, is the annoyance and distraction caused by other people—not only noise, but movement. Ringing telephones and shouting for the person called stand high on the undesirable list, as do noises from plumbing, radiators, outdoor traffic, and nearby kitchens.

Students consider good lighting, without excessive contrast or reflected glare, essential, and they want some control over local temperature and ventilation. Large work surfaces and chairs that "fit" are also desirable. These and other factors that make up a good study environment are summarized in the list at right.

### Libraries

One of the more puzzling aspects of college residence halls is the usual conspicuous absence of books, newspapers, and periodicals for general use. Presumably there are books in students' rooms, but it would seem logical for college residences to make some more visible obeisance to reading. A library can, in fact, be an appropriate focal point for a residence hall if it is convenient to the normal traffic patterns.

Libraries in or near housing units may be simply book collections for browsing, or they may be related to courses of study. If the main library is inconvenient to residence halls,



### Characteristics of Good Study Space for the Typical Student*

1. A small room where one may study alone or with possibly one or two other students.

2. A place being used exclusively for study—at least at the time.

3. Freedom from distractions of movement and noise caused by other people.

4. Freedom from distractions of noise from physical sources; e.g., telephones, plumbing, clanking radiators, typewriters, etc.

5. Good lighting.

6. Temperature and ventilation under personal control.

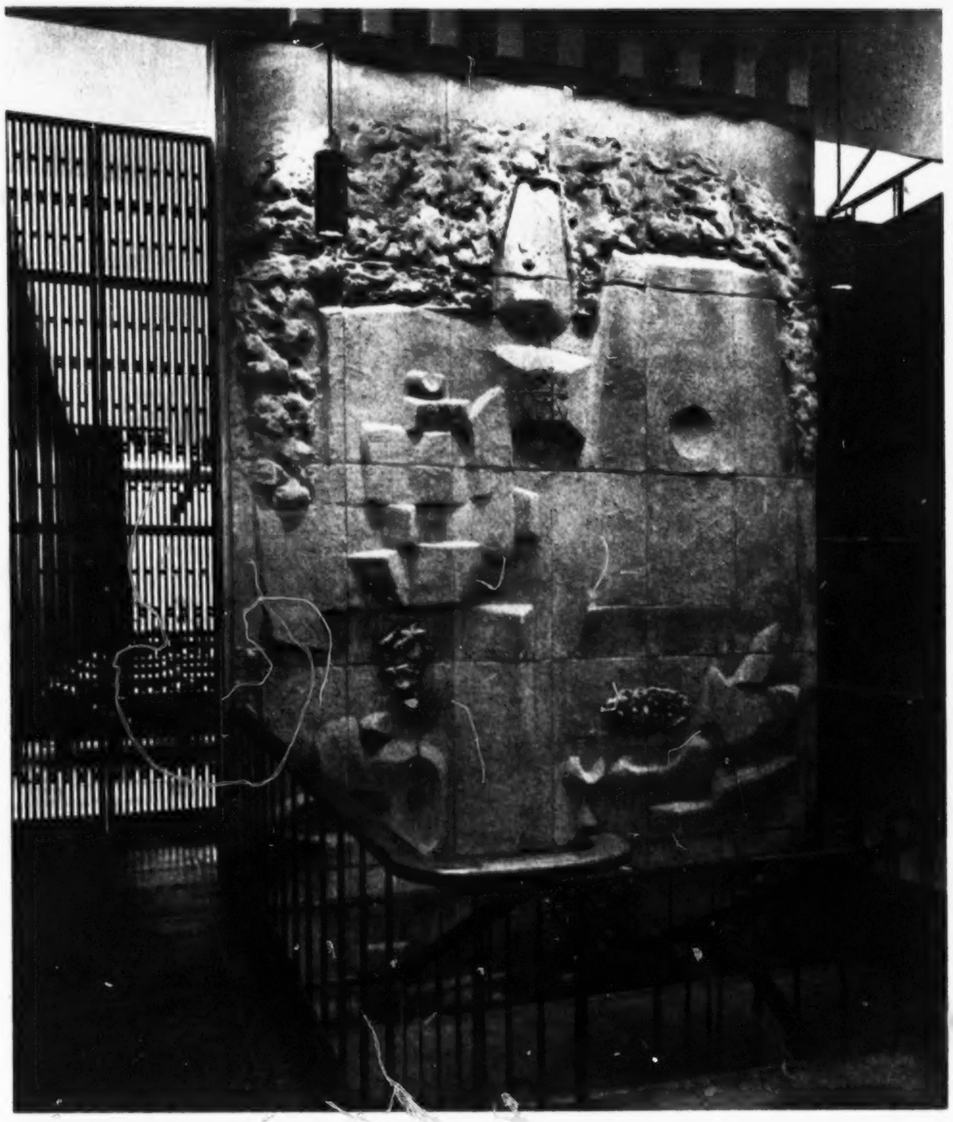
7. Easy access to books and other study materials.

8. Comfortable chairs, adequate desk space, and book shelves.

9. Some chance to relax, wear "easy" clothes, etc.; and for smokers, freedom to smoke.

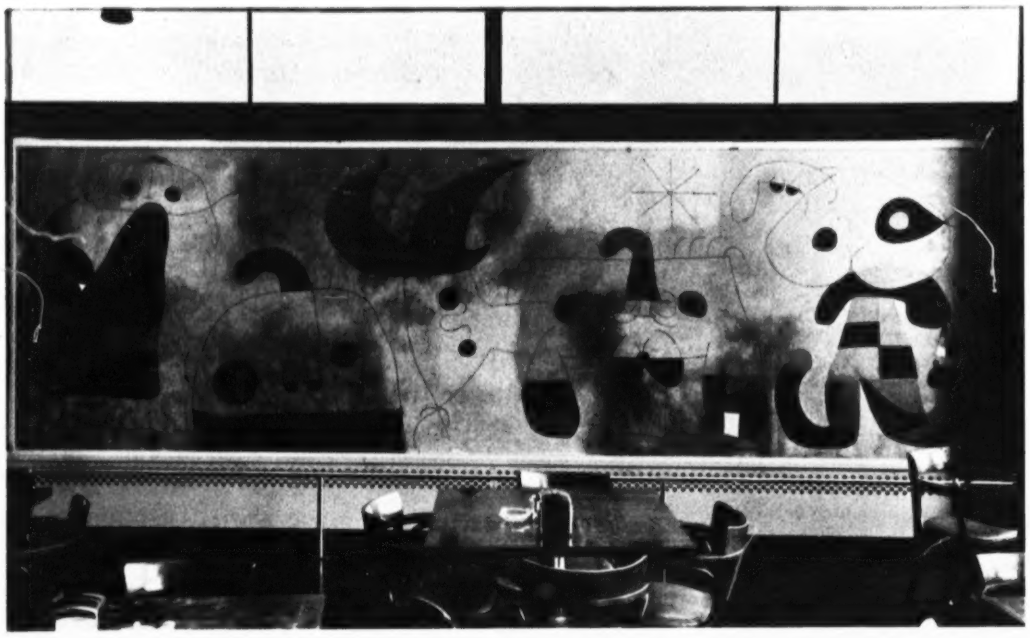
10. Decor and furnishings which are plain but not ugly, definitely not plushy or arty.

**Stuart M. Stoke, Student Reactions to Study Facilities, Amherst, Mass., 1960, p. 32.*



**A Bow to Art**

*A dining hall entrance adorned by a sand sculpture by Constantino Nivola, or a dining room wall enlivened by a colorful Joan Miro mural can certainly whet a student's appetite for art—and probably improve his appetite for food and leisurely table talk*



housing libraries may even be branches that extend the central library's use and influence by making reference material, reserve facilities, and attendants available close to home. Such libraries can also relieve overcrowding and reduce travel time on a large campus.

A housing center at Indiana University contains a small library, and one large dining room there is stocked with books from the central library so that it can be used as a library-study after meals. At the University of New Hampshire, twenty publishing houses have contributed books to two housing libraries on an experimental basis. Students select the books, record their use, and check reading habits. Bennington College makes funds available to enable students to select and purchase books for each housing unit. In a few units elsewhere, the students themselves provide funds to buy books, periodicals, and newspapers.

In general, the requirements for a housing library include accessible bookshelves, a small storage and issue room for reserve materials, good lighting, comfortable chairs for casual reading, tables and chairs or carrels for study—and, of course, books. If the library is also considered a resource center for the residence hall, it can be combined or grouped with listening rooms, study and seminar spaces, and areas for exhibits.

### Meeting Rooms

Centrally located meeting rooms for 20 to 40 people can be planned to accommodate several types of activities during different hours so that the space will be more fully utilized. The activities housed may include music-listening, seminars, educational television, use of reading accelerators, foreign language instruction, small group discussions, and meetings of student organizations.

The number and size of the meeting

rooms will depend on the extent to which the faculty uses them, the size of the total student group, and the dimensions of the housing program. Three or four such rooms in a housing center for between 500 and 800 students should be enough, but at least one or two are desirable for any housing unit.

If located near the food service facilities, one or more of these rooms might be used for luncheon or dinner meetings, or one might contain a kitchenette for special student-prepared meals.

Equipment usually includes comfortable chairs, a sectional table, and perhaps a movable blackboard. Specialized equipment like tape recorders and reading accelerators can be kept in locked storage space.

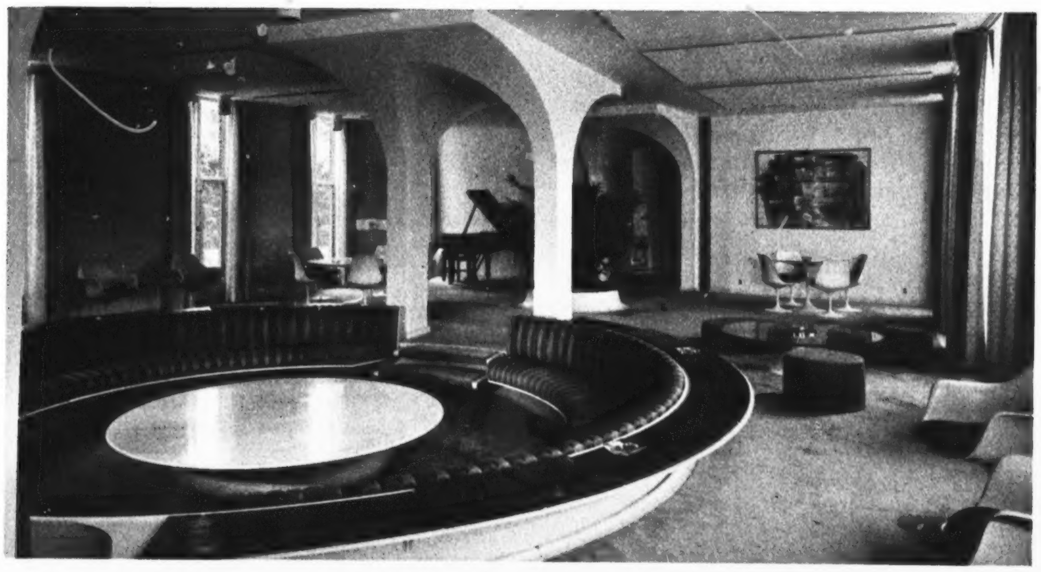
In addition to, or instead of, these central meeting places, many colleges provide similar rooms adjacent to each group of student rooms. Since they are usually used for house meetings to discuss matters concerning the whole group, such spaces should be large enough to crowd in all the students assigned to the related group of rooms. They are often furnished to serve as lounges, but some are equipped as study rooms, which seems a more appropriate use for rooms within the student living area.

### Formal Classroooms

In the past, college buildings often included both classrooms and student rooms, but formal classrooms are seldom included in new housing units. The experience of the few current exceptions to this rule indicates that such an arrangement works best when classrooms in a residence are used primarily by the students who live in the same hall. When the classrooms are unrelated to the routines of the people who live next door to them, there are likely to be traffic problems and other interferences with both classroom activities and resi-

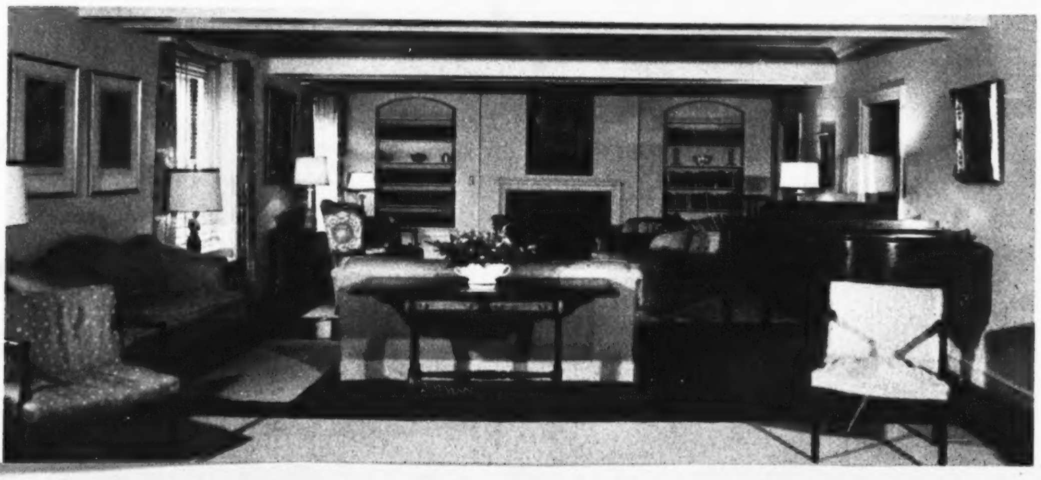
**Three Faces of Learning**

*The principle of making education part and parcel of the life of the residence hall is often preached, seldom practiced. But the few practitioners have proved the validity of the principle and the variety of the possible educational experiences. Above: A terraced penthouse studio can shelter the solitary experimentation of the aspiring artist. Right: A lounge or meeting room can contain—if just barely—the intellectual excitement generated by informal conversation with a Madame Pandit. Below: The residence hall can even make room for formal tutelage in math, if it contains a classroom or a suitably equipped meeting space*



## The Not-Only-On-Sunday Parlor

*Although the lounges shown here are large, fairly formal, and quite different in character, all three see frequent use. The common denominator is furnishings arranged to be as welcoming to couples and small groups as to large gatherings. The two-story residence hall lounge above must double as social center for the entire campus. But the large space required has been broken up into conversation groups of various sizes by planting comfortable furniture on area rugs. A similar arrangement is used in the lounge at left, where pairs of chairs, game tables, and other furniture groupings are placed at discreet intervals around a sunken circular sofa, which students have dubbed "the passion pit." The relaxed atmosphere is enhanced by a quiet color scheme – predominantly white, with carpeting in beige and upholstery in soft shades of mauve, orange and green. The lounge below is furnished in a more traditional style, but it too invites quiet conversation between the resident ladies and their gentlemen callers and other guests*



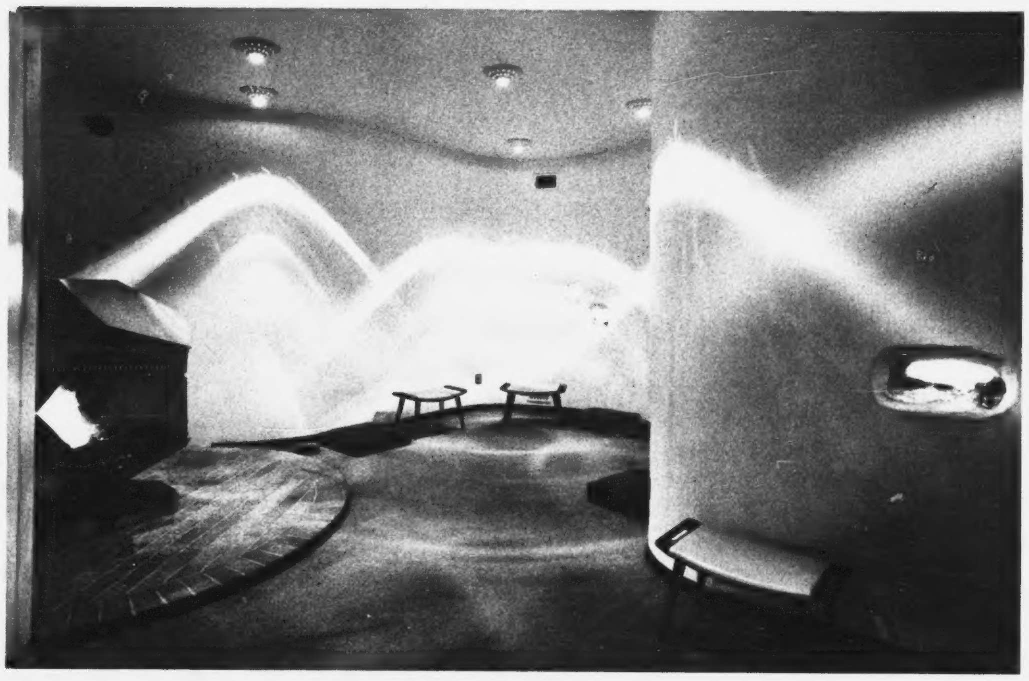
dents' daily routines. Formal classes can be successfully conducted in residence halls (see the case study on Stephens College, p. 141), but it seems safe to say that the combination of the two types of physical facilities must be accompanied by changes in organization and teaching methods if the closer coordination between living and learning is to be effective.

## THE SOCIAL ENVIRONMENT

Since residence halls are the students' homes as well as their offices, they usually include spaces for at-home entertainment and recreation. Since many of their uses are noisy, these recreation spaces should be isolated in some way from student rooms, and care should be taken to prevent one activity's interfering with another. (Television and conversation in the same room won't work.) They should, however, be easily accessible from student rooms and convenient to the normal circulation patterns of the project as a whole. If they are to be used by visitors, they should be adjacent to public areas.

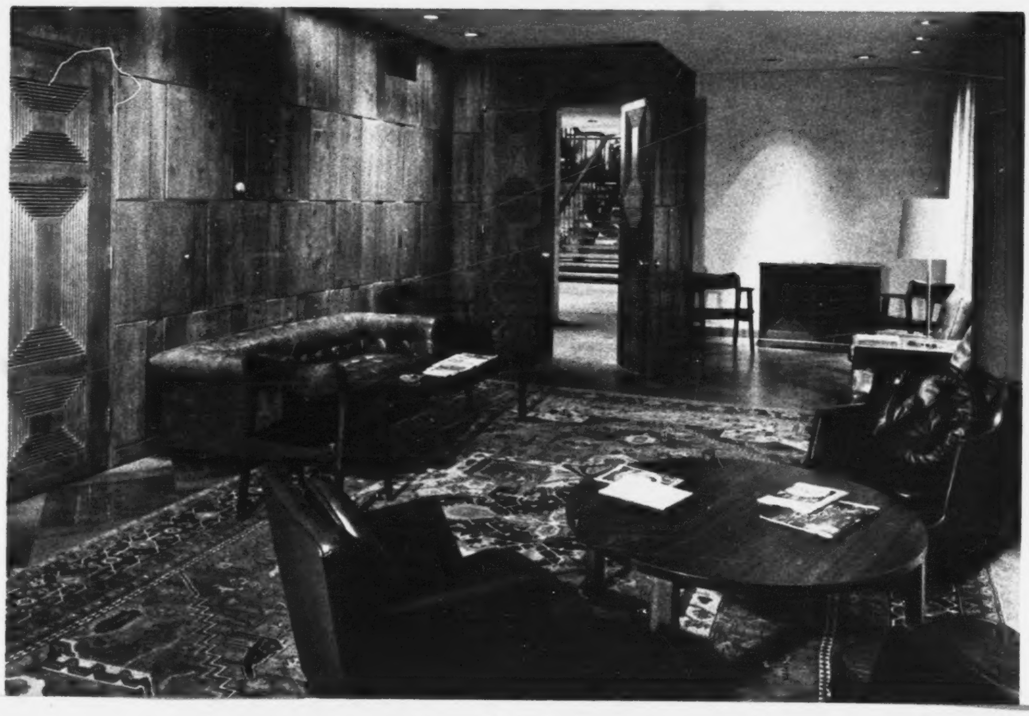
On the whole, existing housing suffers from no great lack of space for recreational and social use. In fact many have too much space for the wrong uses. Large dances or meetings of all the students who live in a hall, for example, are now considered unproductive and undesirable in housing units, and space need not be provided for them unless—as is often the case—the hall must fill in for a non-existent student union. Even so, the necessary large areas will be more useful if they can be easily subdivided.

The total amount of floor area allotted for recreation varies widely, but in general, much more is provided for women than for men. In part, this is because women's residences often must serve as social centers for whole campuses that lack other facilities, and in part because dates at least be-



**The Cave and the Club**

*The informal family living room also has its campus counterparts. Among them is the cave above, a highly satisfactory place to be alone together. Its undulating walls wrap themselves around three niches, one occupied by a fireplace, the other two by loungers. (The word "loungers" is used advisedly, since the furniture consists solely of low benches, cushions, and the floor.) The cave is a part of a girls' school; the room below is obviously not. The wood paneling, the overstuffed leather chairs and sofas, and even the oriental rug speak eloquently of a male sanctuary*



gin and end at the woman's home, and often take place there.

### The Main Lobby and Lounge

As the first point of entrance, the main lobby and lounge set the tone for the entire building, a fact that should be remembered in decorating and equipping them. Too often, a lobby is as formal and uninviting as a furniture display room, while the lounge is as forbidding as an old-fashioned Sunday parlor. Paintings, murals and displays, and informal furniture arrangement will help to encourage students to use the rooms for entertaining their guests.

The main lobby and lounge may be one or two rooms. In either case, the primary functions are circulation, communications, and entertainment of parents and other visitors. An information desk, mail and message delivery, and some form of internal communications switchboard are standard. In women's residences, the check-in and check-out center is usually located in the main lobby. If space is limited, it may be better to transfer the functions of the lounge to a conveniently located social room.

### Informal Social Rooms

The informal social room is usually designed for such activities as group parties, dancing, cards, and ping-pong. It may be furnished with a piano and radio or record-player. If television is provided, it should be put in a separate room since locating a television set in any lounge immediately cancels out any other use. If there is an adjacent kitchenette, it should be large enough for refreshments to be served from it and for small groups to cook occasional meals.

The social room can also be scheduled for larger discussion groups and film showings. If it is used in this way, storage space is needed for folding chairs or other movable furniture.

**Far From the Madding Crowd**

*Gregarious though most of them are, students share with other human beings the need for an occasional opportunity to be alone—to reflect, or read, or pray, or simply escape the constant presence of others. This need for a quiet retreat can be met in several ways—by a simply furnished sitting room set aside for meditation (above), or by a dormitory chapel (left)—but too often it is not met at all. It is no accident that both of these examples are from ministerial schools*

### A Place for Privacy

Contemporary college housing has been accused of providing for almost every student need except privacy, but some colleges—especially church-related institutions — do provide chapels and meditation rooms to which students can retreat. Sometimes these spaces are used for religious services; sometimes they simply provide a suitable place for quiet meditation. Their two essential requirements are location away from major traffic patterns, and furnishings and decoration appropriate to the purpose of the room.

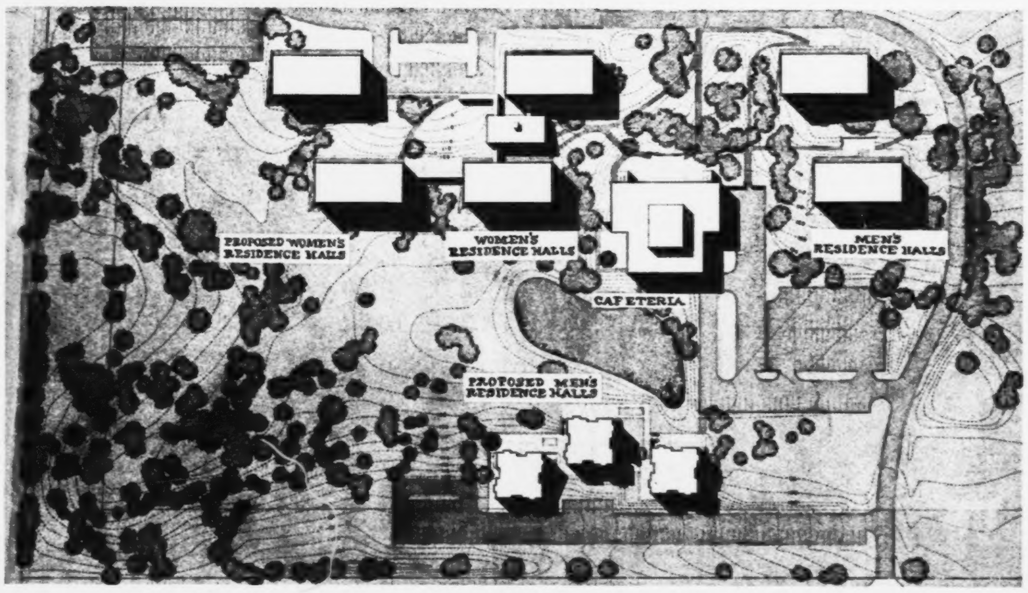
## PLANNING FOOD SERVICES

The decision to locate food service facilities within a particular housing unit or center will depend on such factors as: 1) proximity and capacity of existing services, 2) capacity of the proposed housing unit, 3) plans for future housing expansion, and 4) the importance attached to including food services as a part of the over-all housing program.

### One Kitchen or Several?

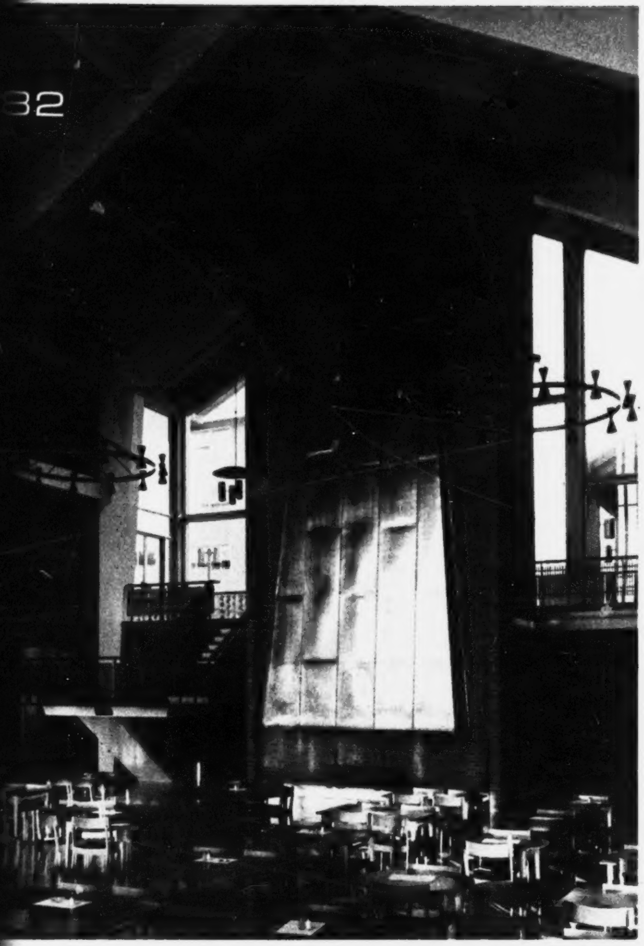
*Centralized food services.* Experimentation by public school systems and industrial plants, and reports by some independent consultants, indicate that well-organized, well-equipped, centralized food service operations may be economical for colleges and universities. Food from one central kitchen is moved by trucks and hot carts to serving areas equipped with hot and cold serving units. In this way, a single kitchen can serve a number of dining rooms in the individual residence halls.

When properly planned, such operations save in floor space, equipment requirements, and the amount of skilled labor needed. Improvements in frozen foods and pre-packaged meals further increase the opportunities for centralization, with a cor-


PROPOSED WOMEN'S RESIDENCE HALLS
WOMEN'S RESIDENCE HALLS
MEN'S RESIDENCE HALLS
CAFETERIA
PROPOSED MEN'S RESIDENCE HALLS

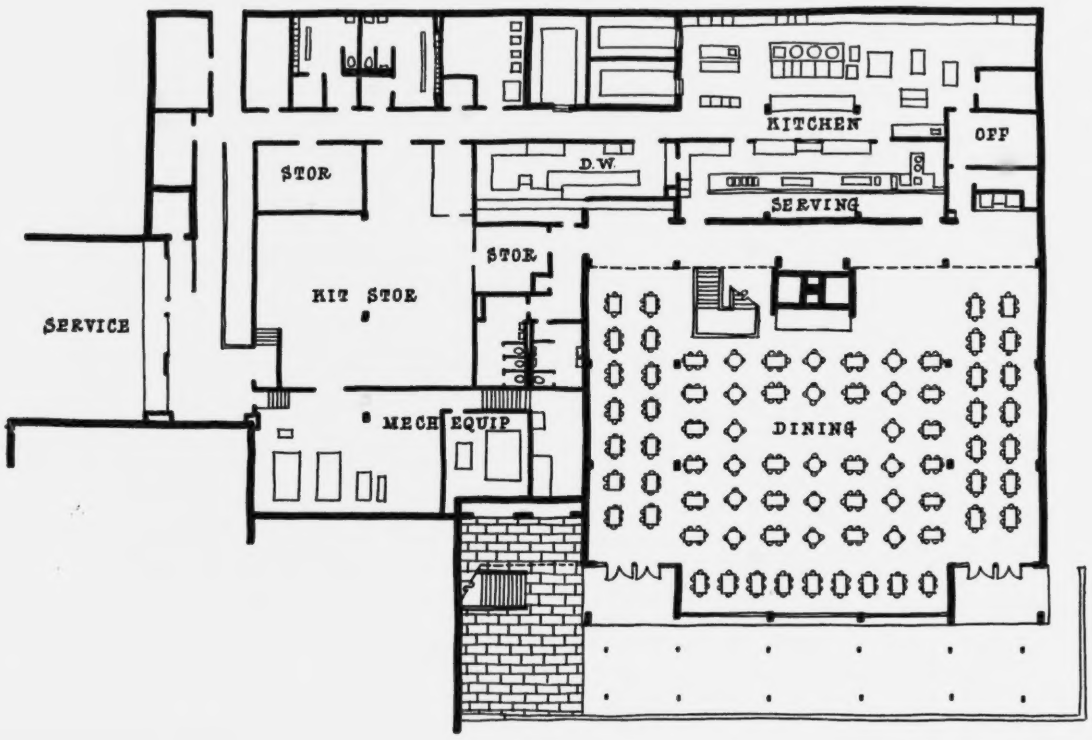
### A Coed Cafeteria

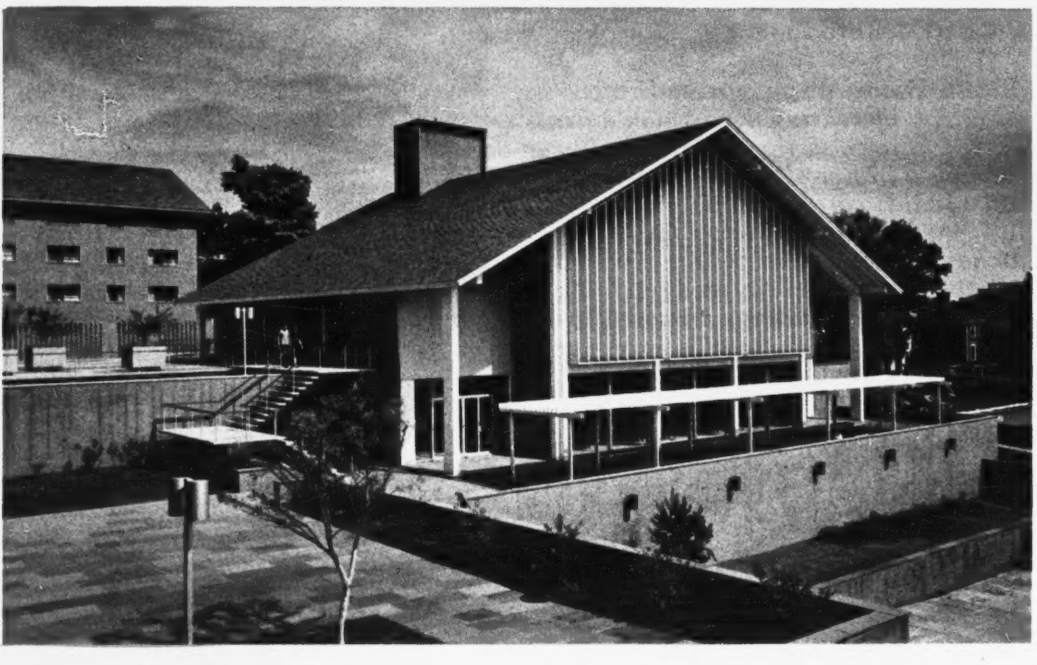
DINING HALL, WASHINGTON UNIVERSITY. *An increasingly common type of food service is the central facility used by a group of nearby residence halls. In this case, the cafeteria serves both men's and women's halls. Its kitchen and dining rooms are sized so that they can eventually feed residents of several new buildings proposed for the same project, as well as students who live in the existing halls shown in the plot plan above*



### Refectory cum Commons

DINING HALL, RHODE ISLAND SCHOOL OF DESIGN. *A series of outdoor plazas and terraces that serve as outdoor living rooms tame the steep slope of this site, and link the refectory, which perches halfway down the hill, with women's halls at the top and men's halls at the bottom. A further link is a women's lounge adjoining the refectory. The impressively proportioned, 420-seat dining room with its tall copper-hooded fireplace and informally arranged tables and chairs often doubles as the setting for large-scale campus gatherings*





responding decrease in required food storage and preparation areas.

At some large institutions, baking, butchering, and food storage are already centralized, but many food service people believe that centralizing food preparation as well has disadvantages. Most frequently mentioned are the cost of transporting food, limitations on menu variety, and loss of taste.

*Decentralized services* are frequently preferred when dining rooms are located in widely separated buildings, even though fully equipped kitchens must then be duplicated. The major advantages cited are greater management efficiency, better menu variety, and closer coordination between food stores on hand and menu preparation.

Decentralized food operations have minimum limits. Current management opinion generally favors kitchens serving from 800 to 1500 as the most economical. When the number drops below 500, unit cost tends to increase, although some managers feel that kitchens for as few as 200 can operate on a break-even basis.

In the end, the question to be resolved by institutional planners is the cost and results of one central kitchen plus food transportation compared with the cost and results of a number of dispersed kitchens. Certainly initial costs for kitchen equipment and mechanical services are high, as are continuing operating costs, especially for labor. But the cost issue is often confused by the tendency to over-equip kitchens and to accept inefficient layouts.

### Planning the Kitchen

*Kitchen size* is determined by the number of meals to be served, and the types of menus to be prepared. Some planners use the figure of six square feet per diner; others use a rule of thumb that calls for a food preparation area equal to 45 per cent of the total dining area to be served. If only one menu is to be prepared, this space can be reduced to 30 per cent.

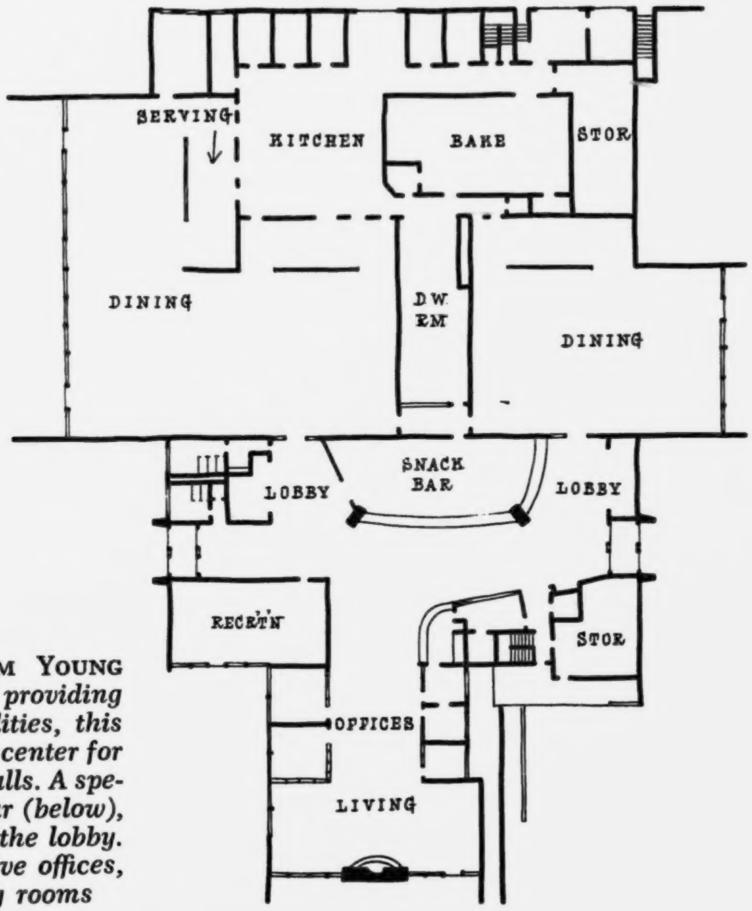
Efficient planning and taking advantage of modern developments in pre-preparation, packaging, shipment, and storage of food may also help to cut down on the space and equipment needed in the kitchen.

*The layout of the kitchen* usually revolves around several preparation centers: salads, sandwiches, vegetables, baked goods, meats, and so forth. In a well-planned kitchen, these centers are organized so that the flow of food is as direct as possible: equipment is grouped according to the job to be done. The aisles between centers should be about 36 inches wide if work is done only on one side; 48 inches wide if work is done on both sides. Wider aisles waste steps as well as floor area, while narrower ones cause crowding.

*The kitchen equipment* itself is selected and located for maximum efficiency and to minimize labor. Some of it, such as work table tops, should be adjustable in height so that the work flow can be kept about waist-high. When practicable, the worker should be able to sit at his task.

Other equipment items should be movable. For example, as salads are prepared they can be placed on wheeled carts, moved into refrigerated units for temporary storage, and brought to pass-through units or serving lines as needed. Some items like vegetable cutters, meat slicers, and mixers, which are needed at a number of locations, may also be portable.

Recent developments in equipment include more mechanical means for timing, tending, and stirring foods—automatic coffee makers, oven controls, and the like. Mechanical loaders and unloaders for ovens, portable pumps to simplify food transfer, and



**Snacks and Socials**

CANNON CENTER, BRIGHAM YOUNG UNIVERSITY. *In addition to providing complete food service facilities, this building serves as the social center for seven men's and women's halls. A special feature is the snack bar (below), a glass cage that overlooks the lobby. There are also administrative offices, and recreation and meeting rooms*

### Behind the Scenes

*The baking and roasting center below is typical of the special food preparation centers found in the modern kitchen. A dishwashing room is shown at bottom. Note the wheeled carts used to transport food and dishes*

piping to move some foods directly to serving lines are also possible.

*The kitchen environment* is another important factor in achieving maximum efficiency. Desirable temperatures range between 65 and 73 degrees F, with lower temperatures in the winter than in the summer. The best temperature control system is, of course, air conditioning, which reportedly can increase production rates by as much as 10 per cent. Simpler controls include dehumidifying equipment, intake and exhaust fans (which must be balanced with the ventilation of equipment hoods), and insulation of such heat-producing items as steam kettles and fryers.

Illumination, another environmental factor, should produce shadowless light and eliminate dark areas in order to reduce accidents and improve the quality of work. The use of pleasant colors on walls and even on some equipment has been found to boost worker morale. Noise is a constant problem, but it can be reduced by using cleanable sound-absorbing materials on ceilings and upper walls, resilient floor surfacing in aisles, and noiseless tires on portable equipment.

Since sanitation is all-important in food preparation areas, all spaces should be easy to clean, equipment should be designed so that food and dirt will not accumulate, and adequate floor drains and water or steam sources should be provided.

### Kitchen Complements

*The amount of food storage space,* both dry and cold, that is needed within the kitchen depends on purchasing procedures, operating methods, and again, dining area. Many planners set aside storage space equal to about 25 per cent of the dining area for an inventory of about a third of a month's requirements. This amount of space can be materially reduced if standard time orders are maintained with food suppliers, or if more frozen, semi-prepared, or dehydrated foods are used. An ingredient storage and issue room, with certain items pre-measured, can cut labor time and eliminate the element of chance in food preparation.

*Dishwashing areas* must be large enough for the necessary automatic equipment, for receiving the peak load of soiled dishes, and for equipment to load clean dishes for return to service areas. A space equal to about 20 per cent of the food preparation area is often provided, but for central kitchens the proportion is usually somewhat greater. Noise control, high-temperature hot water, adequate ventilation, and garbage disposal are among the special requirements.

*Garbage disposal* requires some space and equipment for refrigerating garbage and for cleaning containers. Automatic waste disposals, which are increasingly common at kitchen sinks and in dishwashing rooms, require adequate sewage lines.

*Supervision facilities,* which include the receiving area, the manager's office and employees' restrooms, may total as much as 15 per cent of the dining area. The *receiving area,* with facilities for weighing and checking in supplies, should be easily accessible for deliveries at the unloading dock and convenient to storage space. The *manager's office* should be large enough for a desk, chair, and files, located so that the kitchen can be observed, and enclosed for privacy.

*The food serving area,* whether a cafeteria line or a counter for waiters, may require floor space equal to about 20 per cent of the dining area. The efficiency of either type of service is increased when related jobs are grouped and when movement of

**Bon Appetit?**

*If food is attractively displayed, and progress fast and orderly, the serving line (above) may be a not unpleasant prelude to a meal. The end of the line can be a different—and unappetizing—story if the dining hall proves that the college is, after all, an institution*

people and equipment to and from the kitchen is minimized by such devices as hot and cold pass-through compartments. In cafeteria lines, attractive display of food requires adequate space, good lighting, and imaginative planning. To speed service, items which may cause delay in the line — silverware, napkins, condiments, and so forth—should be located in the dining room whenever possible. Beverage dispensers may also be moved from the serving line to the dining area.

The serving square—often known as "scramble" or open-line cafeteria service—is another way of reducing time in line, but it is effective only when there is more than one menu and when large numbers of diners are to be served in a short period.

**Dining in Style**

*Good design and decoration go a long way toward preserving mealtime amenities. The almost monastic simplicity of the dining hall above is relieved by subdividing its long narrow expanse with structural columns. The dining room below banishes institutionality with an attractively framed view, and a casual arrangement of tables of various sizes and shapes*

### Planning the Dining Room

*The size of the dining room,* which is usually estimated at 10 to 14 square feet per diner, and the amount of equipment needed depend on the turnover, or number of diners per seat, which in turn depends on the type and speed of service. Such planning factors as efficiency of kitchen layout strongly influence turnover, as does the length of time students customarily spend at meals. However, the effect of the type of service on turnover is more easily predicted and has become the common basis for determining required area.

Table service usually requires seating space for the total number of diners at once, although in some instances more than one seating is scheduled. On the other hand, several seatings are likely with cafeteria service, for which one rule of thumb is a turnover of two and a half to three diners per seat in a two-hour serving period. The resulting maximum utilization of kitchen equipment and labor, as well as the difficulty in obtaining waiters, has made cafeteria service the most common type, but a number of institutions are trying to retain table service for at least the evening meal.

Another trend is toward smaller dining rooms—preferably with seating capacities below 120—which help to counteract the impersonality and distraction of mass feeding and make mealtime more pleasant. The arrangements used include small dining rooms clustered around a central kitchen; movable partitions used as room dividers; and cafeteria lines located in separate rooms or simply out of sight of the diners.

Hand in hand with this trend go increased efforts to improve the dining environment by providing more attractive furnishings and decoration, and better lighting and noise control. In some cases, dimmers are used to vary light intensity, with more subdued lighting for evening meals; and carpeting is installed to upgrade the tone of the room and muffle noise.

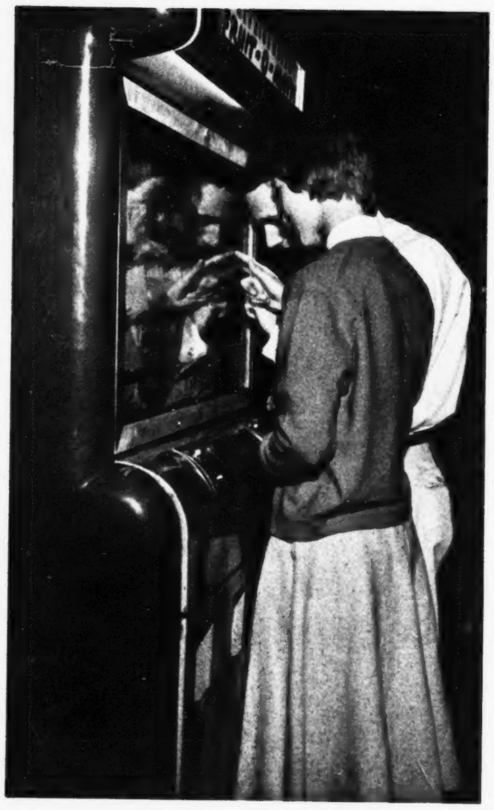
### Kitchen Supplements

*Snack bars* are usually designed to supplement regular food services by providing light refreshment between meals. On a large campus there may be several, in student unions or instructional areas as well as in conjunction with housing. A common location is in or adjacent to the main dining room so that double use can be made of kitchen and dining facilities. When the cafeteria serving counter also serves the snack bar, it should include a fountain and grill.

*Vending machines* are sometimes used to replace staff-operated snack bars. In this case, the variety and quality of food is limited, but labor costs are greatly reduced. The machines are sometimes located in dining areas to allow for sit-down snacks, although they are more commonly placed at other convenient points.

**A Study in Contrasts**

*Campus food service can, and does, cover a wide range in kind and quality—from the quick sandwich at a snack bar, to the elegantly set and served formal meal in a pleasant dining room (above), to the gobble-and-run lunch in a vast cafeteria, to the midnight coffee in the students' rooms, to the apple snatched from a handy vending machine (below)*



# WHO PLANS AND HOW?

HOUSING IS A VITAL PART of the total college program, but it is only a part. As such, it must be incorporated smoothly into the whole—a process that demands careful attention to the institution's over-all pattern of physical growth and to its policies and aims, as well as to its specific housing requirements.

## THE CAMPUS MASTER PLAN

For housing planners, a master plan that indicates appropriate building sites, desirable building relationships, and a general direction for expansion is the only means of insuring orderly growth and development. A good plan is a visual representation —often an actual model—of the present and future campus, with land area zoned for the major institutional functions, with existing buildings and other features shown, with traffic flow and parking areas indicated, and with proposed structures tentatively located on their sites.

"Tentatively" here is the key word. The campus plan can never be static if it is to be of real help in the orderly assimilation of new developments. Since providing for change is essential, it must be reviewed periodically and revised when necessary. Above all it must be *used* in making day-today decisions on campus growth.

### Steps in the Planning Process

1. *Review the institution's aims*, policies, major areas of specialization, teaching methods, and other factors affecting the kinds of students to be accommodated and the necessary physical facilities.

2. *Survey local facilities:* utility systems, traffic and parking, cultural and social activities, public school facilities for children of students and faculty members, police and fire protection, and present and future uses of property adjoining the campus. The planning of land use, zoning, buffer areas, and vehicular traffic patterns should be coordinated with the neighboring community.

3. *Study the existing campus* circulation patterns, buildings, facilities, and grounds. For buildings, list age, present condition and use, and estimated usable life. Study efficiency of space use, and the present and future departmental workloads and relationships. Review the total physical plant for major problems, advantages, unrealized potential, and unique features that contribute to the character of the institution.

4. *Develop the preliminary campus master plan.* Make recommendations for razing, remodelling, new construction, and possible changes in use.

### Land Acquisition

As more and more areas become more and more urban, many institutions are finding themselves hemmed in by the growth of adjoining communities. Some institutions already face a critical land shortage, while others can expect to encounter the problem in the next 10 to 15 years.

If additional land will be needed for anticipated expansion, steps toward acquiring it should be taken well ahead of time. Obtaining land is likely to be a long-term process, and delays nearly always result in higher costs, if not in actual blocking of expansion or forced revision of plans.

The amount of land required depends on many considerations, nearly all of which reflect major policies. The most important are expected enrollment, desired land coverage, density per acre, planned building size and capacity, and relative costs. Other vital considerations are the compatibility of planned land acquisition and development with institutional aims and with surrounding land use and major traffic arteries.

### Locating Buildings

By setting forth the over-all type of campus development desired and by restricting or providing for expansion, the campus plan becomes a direct extension of institutional policy. Surrounding the central academic core with peripheral housing—one planning pattern, is an excellent way of limiting growth since it restrains the expansion of instructional spaces. In contrast, groups of housing units can be interspersed among academic building groups so that both can be expanded. Sometimes these and other land use patterns are combined.

At most colleges, however, the central campus area will be reserved for academic purposes. The controlling principle may be to isolate academic buildings from disturbing noise sources, to group related departments or divisions in adjoining buildings, or to give the library a prominent position on the campus.

Housing and recreational facilities will usually be located at the perimeter of the academic area, while the location of public facilities will depend on the program of the particular institution. Internal service buildings and sports arenas and playing fields will, of course, be at the edge of the campus or entirely beyond.

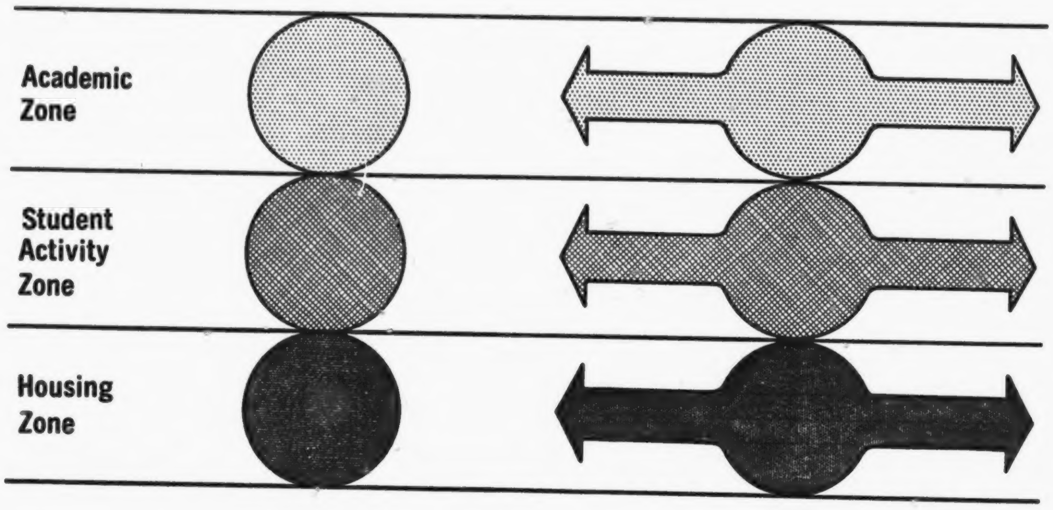
Vehicular traffic access and parking should be closely related to buildings that attract the greatest amount of use by the visiting public: auditoriums, housing units, the activity center, and administrative buildings. Care should be taken to coordinate campus traffic with important community and regional traffic routes.

### Allocating Land

*Intensity of land use* is another factor that enters into the campus plan, but ratios of building coverage to land area vary widely from campus to campus—from the sprawl of the rural land-grant university to the compact-

## SITE PLANNING

Why not zone this way



> *"It goes without saying that the only weapon we have had to combat the typical tendency towards dropping a building into the first vacant space is that of rather rigid land zoning in which certain areas are dedicated specifically for certain purposes. These areas naturally have to be carefully related as to function and make provision for ultimate growth. Within this framework there is considerable latitude for continual development."*
>
> Jefferson Hamilton
> *University of Florida*

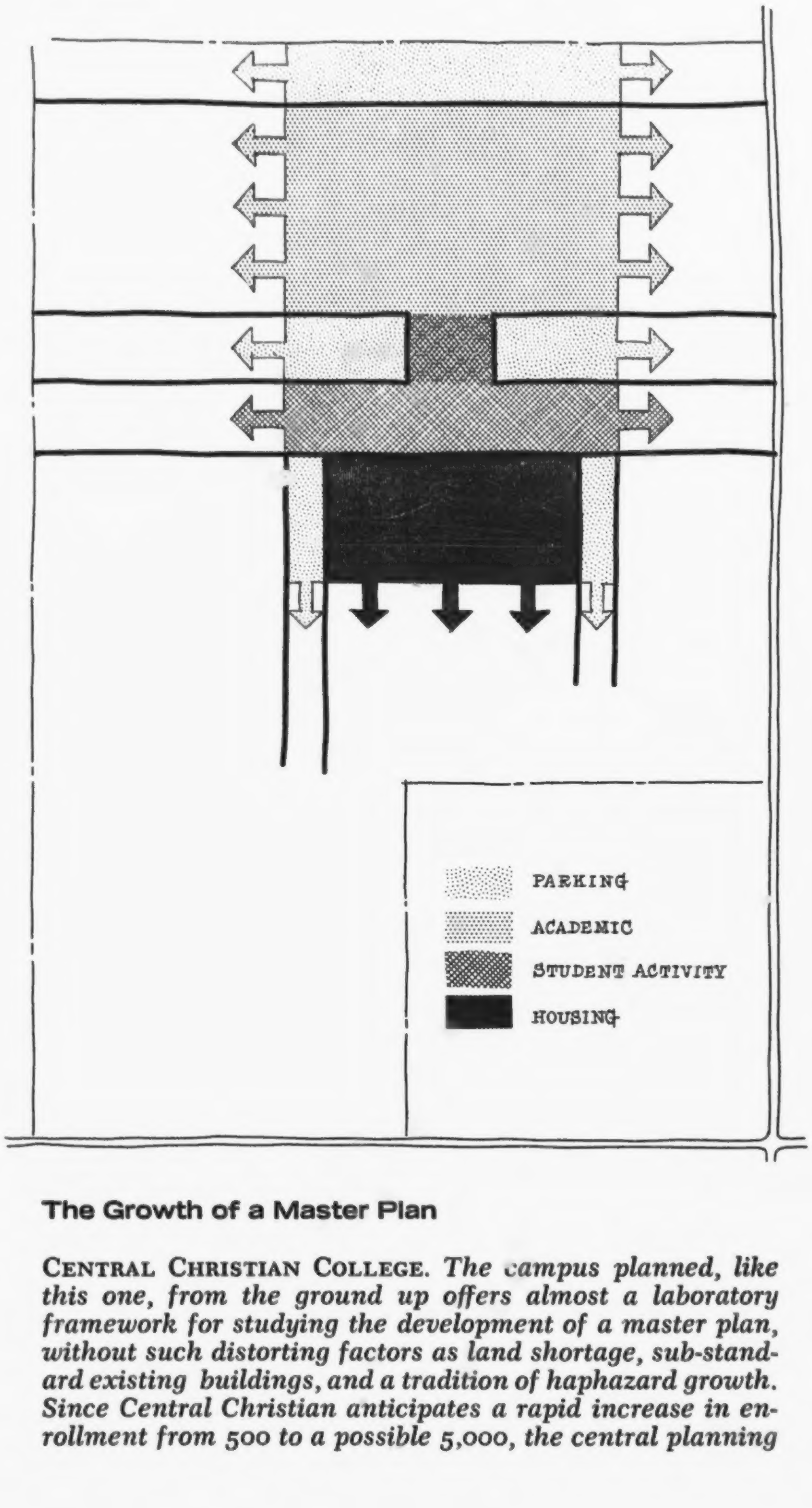
ness of the big-city college. There has been little study, if any, aimed at determining desirable norms, but current practices by a few planners may be useful as a general guide.

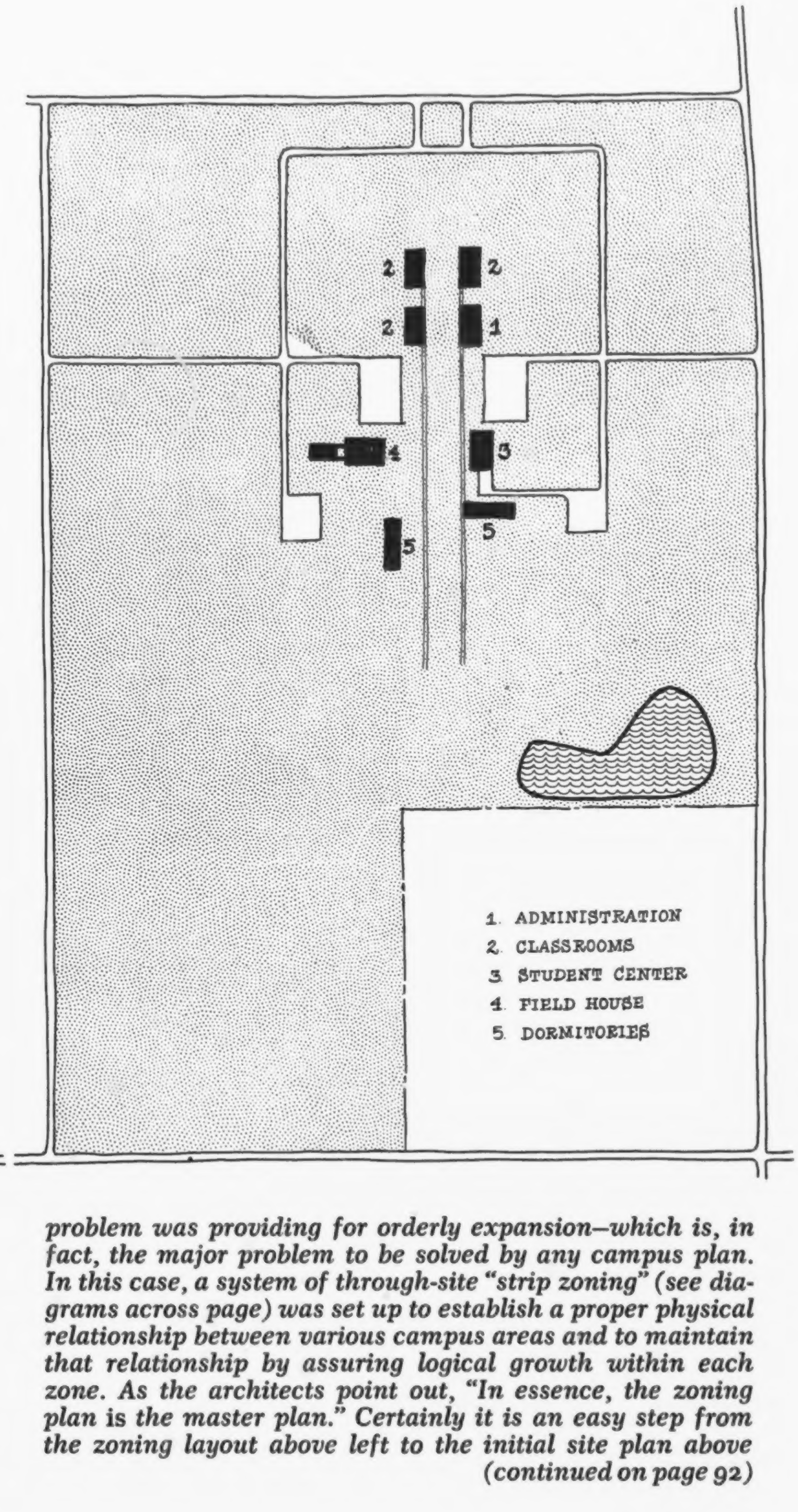
- For instructional areas, 25 per cent over-all coverage (buildings versus land) is a common criterion.
- For single student housing in low-rise buildings of four stories, a frequent density ratio is 75 to 90 students per acre, with the lower density preferred. In high-rise housing, as many as 200 students per acre may be acceptable, depending to some extent on the kinds of students housed.
- For walk-up apartment housing, a reasonable maximum seems to be 16 to 20 families per acre. A higher ratio is likely to cause overcrowding.

*The amount of floor space provided for each student* also varies widely. In academic facilities, requirements depend on the kind and level of instruction; in residential facilities, on the kind of student. In addition different institutions have different standards.

According to the United States Office of Education, existing instructional buildings and related facilities provide an average of about 175 gross square feet per student. A 1958 report from the American Council on Education, however, suggests 200 gross square feet per student as a rule of thumb for estimating space needs for all nonresidential buildings. Both this report and the Office of Education's *Physical Facilities Survey, Part 2* project a space need of 125 square feet per additional student for expansion of existing institutions.

A rough idea of the space provided in existing residential units is given in Table 1, which shows the results of a survey based on information provided by the HHFA's Community Facilities Administration. The total square footages given per student are simply averages for recently built

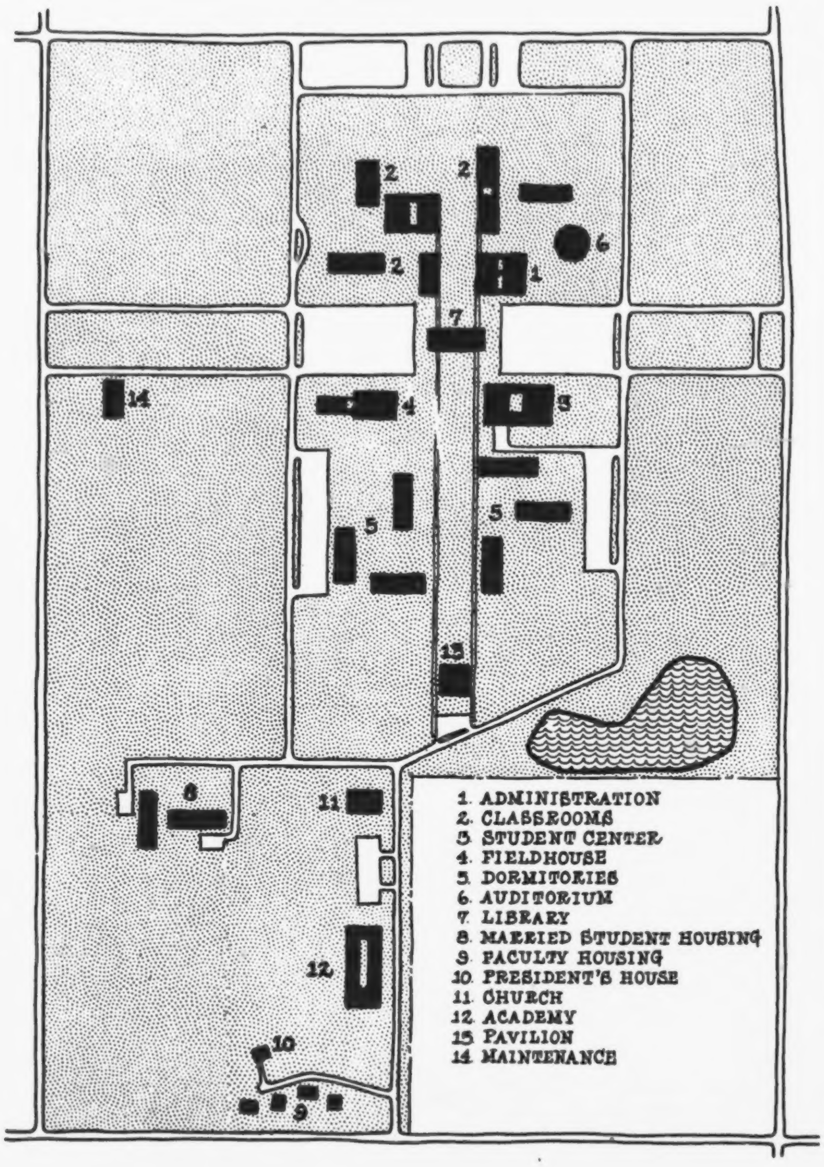

PARKING
ACADEMIC
STUDENT ACTIVITY
HOUSING

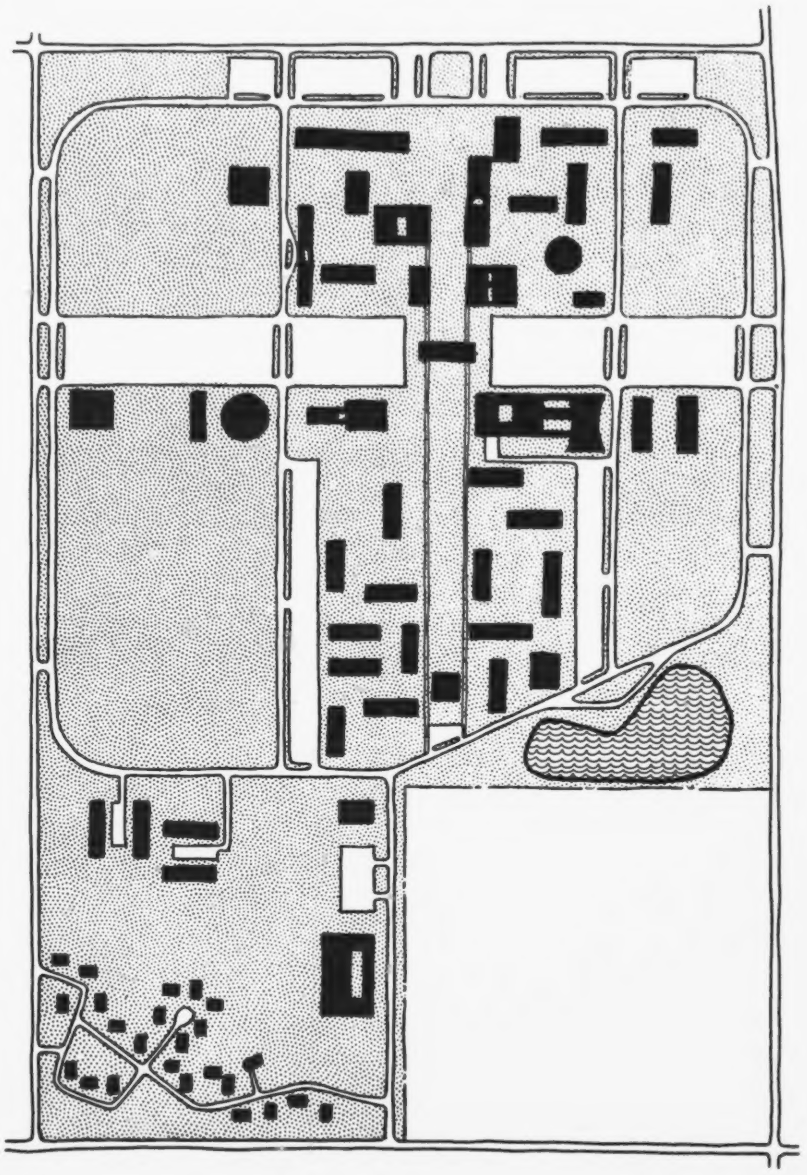

2
2
2
1
4
3
5
5
1. ADMINISTRATION
2. CLASSROOMS
3. STUDENT CENTER
4. FIELD HOUSE
5. DORMITORIES

## The Growth of a Master Plan

CENTRAL CHRISTIAN COLLEGE. *The campus planned, like this one, from the ground up offers almost a laboratory framework for studying the development of a master plan, without such distorting factors as land shortage, sub-standard existing buildings, and a tradition of haphazard growth. Since Central Christian anticipates a rapid increase in enrollment from 500 to a possible 5,000, the central planning problem was providing for orderly expansion—which is, in fact, the major problem to be solved by any campus plan. In this case, a system of through-site "strip zoning" (see diagrams across page) was set up to establish a proper physical relationship between various campus areas and to maintain that relationship by assuring logical growth within each zone. As the architects point out, "In essence, the zoning plan is the master plan." Certainly it is an easy step from the zoning layout above left to the initial site plan above*

*(continued on page 92)*


1. ADMINISTRATION
2. CLASSROOMS
3. STUDENT CENTER
4. FIELDHOUSE
5. DORMITORIES
6. AUDITORIUM
7. LIBRARY
8. MARRIED STUDENT HOUSING
9. FACULTY HOUSING
10. PRESIDENT'S HOUSE
11. CHURCH
12. ACADEMY
13. PAVILION
14. MAINTENANCE



*(continued from page 91)*

*The site plan on the preceding page indicated the buildings, parking, drives, walks, and site work needed to get the college into operation with an initial enrollment of 500 students. The site plan for Stage 2 (above left) shows how the college might be expanded to accommodate up to 1,500 students. The architects emphasize that this expansion need not take place according to any definite time table, and that the exact location, size, and shape of the future buildings are less important than making sure that the facilities are located in the right zone, in proper relation to other buildings. Perhaps the most significant addition at this stage is the library, which is located not in any of the defined zones but in a central position between the academic area and the student living and activity areas. The transition from Stage 2 to Stage 3 (above right), when the college may enroll from 1,500 to 5,000 students, is a logical progression accomplished by repeating the basic pattern of building within the proper zones the additional academic buildings, housing, and special facilities needed as the college grows* residential facilities with and without food services and cannot be considered ideal or even minimum. However, comparing these figures with those for instructional units leads to the estimate that slightly less than one-half of the building space on campus should be allocated for housing when an existing institution is expanded. If a new institution is being built, the ratio drops to about one-third. The obvious variables are type of curriculum, teaching methods, married student enrollment, and the percentage of students to be housed.

### Traffic and Parking

The land-hunger of the automobile is becoming as common a problem for colleges as it is for cities. According to the experience of a few institutions where car operation is not restricted, 5 to 10 per cent of the single women, 20 to 25 per cent of the single men, and as much as 90 to 100 per cent of the married students in residence are likely to have their own cars. Since from 75 to 90 cars per acre—the same density allowed for people in low-rise single student housing—is the usual allowance for parking, the implications for campus planning are obvious.

Many colleges and universities have attempted to limit the amount of land swallowed up by parking facilities by limiting student use or possession of cars. This often reduces the problem, but it does not necessarily eliminate it. Many car-owners —commuters, married students, faculty, and visitors—are exempted from the regulations, and the bicycles and motor-scooters that replace banned automobiles create knotty traffic and parking problems of their own.

Other plans restrict campus areas to pedestrian traffic, with vehicular traffic terminating at key perimeter points. Similar restrictions are applied to groups of housing units, especially those assigned to married stu-

> *"Certain master plans for colleges have been made along great axial schemes. They do not work out when you add the dimension of time. Usually, the plan falls apart. This master plan is simply an indication of a beginning. The program will change and the plan will have to adjust to a new program. A master plan should be a continuous process, not an ironclad design. It should grow like a baby, in all directions outward."*
>
> Eero Saarinen
> *Architect*

**TABLE 1:**

### SPACE PER STUDENT IN EXISTING HOUSING UNITS

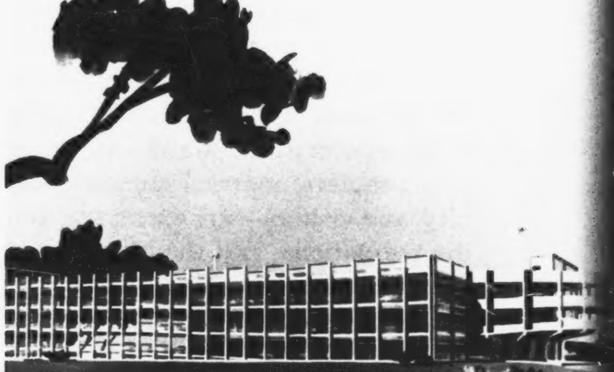
| Housing Type* | Number of Projects | Average Gross Area per Student or Apartment |
|---|---|---|
| **Single Men** | 230 | 212.7 sq. ft. |
| **Single Women** | 180 | 253.4 |
| **TOTAL** | 410 | |
| **COMBINED AVERAGE** | | 230.8 |
| **Married Students** | 39 | 667.2 |
| **TOTAL** | 449 | |
| **COMBINED AVERAGE** | | 268.7 |

**With and without food services.*

*Note: Combined averages are weighted for relative numbers of men and women, single and married students.*

### SPACE REQUIREMENTS FOR 5,000 STUDENTS

| If a new institution is planned: | Total Sq. Ft. | Per Cent |
|---|---|---|
| **Instructional space:**<br>175 sq. ft. per student x 5000 | 875,000 | 62 |
| **Residential space:**<br>268.7 sq. ft. per student x 40% of 5000 enrollment | 537,400 | 38 |
| **If an existing institution is expanded:** | | |
| **Instructional space:**<br>125 sq. ft. per student x 5000 | 625,000 | 54 |
| **Residential space:**<br>268.7 sq. ft. per student x 40% of 5000 enrollment | 537,400 | 46 |



PLEASE
DO NOT PARK
BICYCLES
IN
THIS AREA

**Parking Versus People**

*The problem posed by parking's swallowing up of campus land that might better be used for people has often been met by attempts to banish the car from the campus altogether, although this can create parking problems of another sort (see above). Another approach is to preserve land by stacking cars in multi-level garages*

dents with children, but practical considerations still demand traffic access to individual buildings for visitors, service trucks, and loading and unloading student luggage, as well as for emergencies.

Unless local regulations succeed in eliminating automobiles, some parking space is needed reasonably close to student housing. This space can be provided in a number of ways, many of which are designed to help offset the cost of the facilities. At the University of Illinois, parking spaces are assigned and reserved for a small fee which is collected by the term. A high-rise men's hall at the University of Washington has basement parking. At Emory University, a two-story self-service garage is available for students, faculty and visitors at minimum rates. The University of California at Los Angeles, in a region where car ownership is high, plans to build high-rise parking garages around the campus perimeter, with spaces to rent at about $50 per year.

### Stretching the Campus

At many institutions, the most critical problem faced in devising a long-range campus plan is the need for stretching the campus to accommodate increased enrollments. The most obvious solution, and the one most often used, is to expand acreage by acquiring more land on the perimeter of the campus. Many campuses, however, are so hemmed in by commercial or residential development that contiguous land is simply not available or is available only at a prohibitively high cost. As a result, the institutions are turning to such alternatives as increasing density and coverage, developing nearby satellite campuses, or combining these approaches with the acquisition of limited amounts of adjacent land.

An example of satellite development is the 900-acre North Campus of the University of Michigan, where married students' housing and instructional and service facilities are operated semi-independently of the main campus. Among the principal determinants of the master plan were regional accessibility, compatibility with the surrounding community, and correlation of density and coverage, as well as structural scale and form, with assigned building functions. Above all, the master plan was kept fluid enough to accommodate change—which has already taken place. In the ten short years of its existence, the campus has already seen substantial expansion.

At Ohio State University, which is strait-jacketed by the city of Columbus, the alternate approach of expanding by increasing density and coverage has been taken. Five 11-story residence units housing a total of 2,300 students have been built within the equivalent of about two city blocks for a site coverage of 1.14. (The total floor area exceeds the total land area of the site by .14.) At the same time, land some distance from the campus has been acquired for apartment housing and other uses.

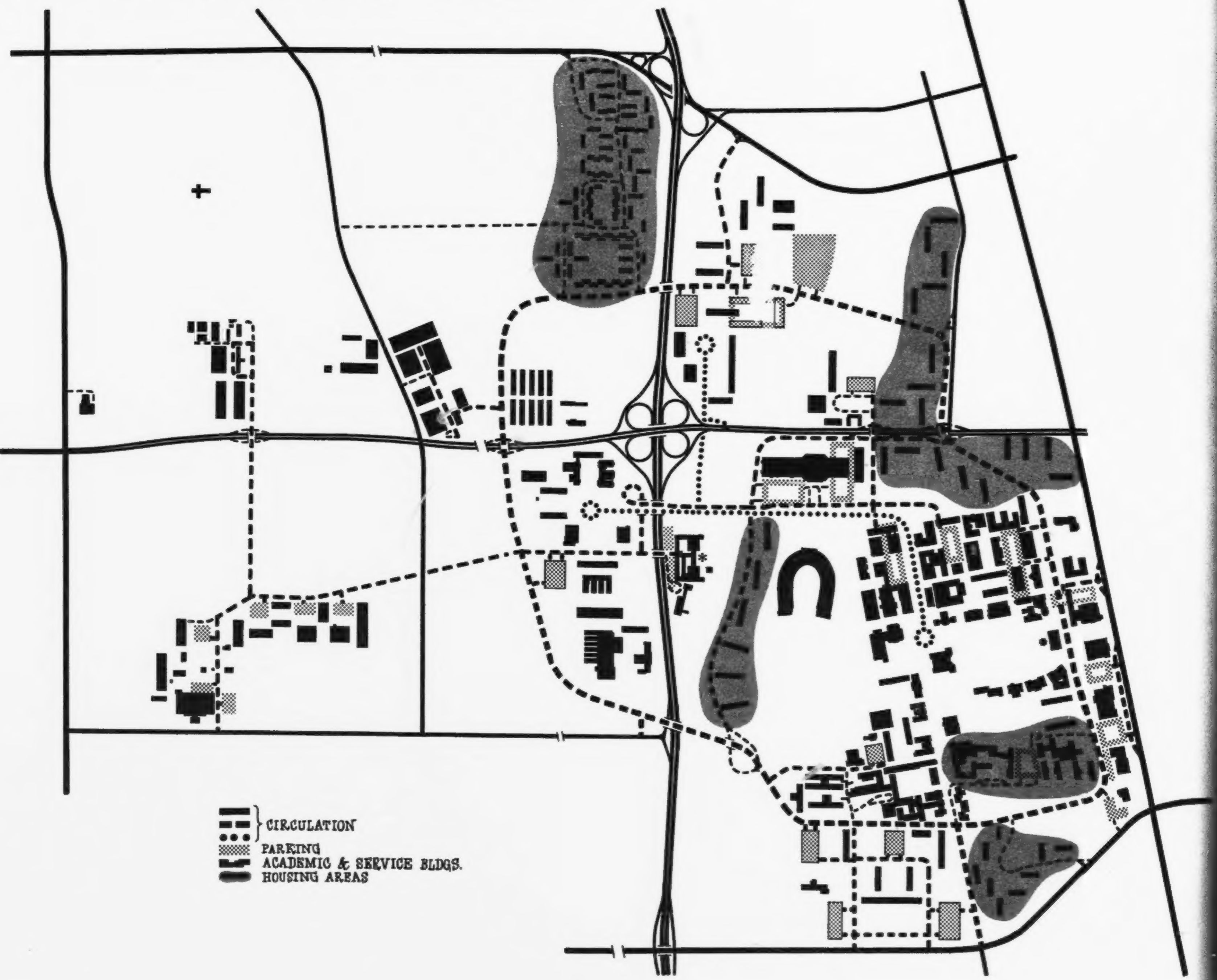
### Replacing Substandard Buildings

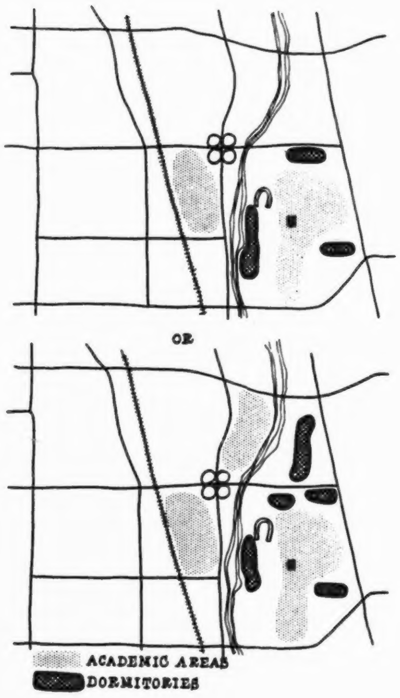
The orderly replacement of substandard existing buildings may present the campus planner with a problem as great as finding land on which to build new ones, largely because of the difficulty of proving that an outmoded building is a liability to the whole educational process. Functional or physical obsolescence is often endured until floors sag too far, roofs or plumbing leak too much, heating systems fail too often in cold weather, or the local fire department cracks down too firmly. And the planner must sometimes contend with a sentimental attachment for an ivy-covered eye-sore.

Even when buildings are so obviously substandard that there is no resistance to replacing them, the

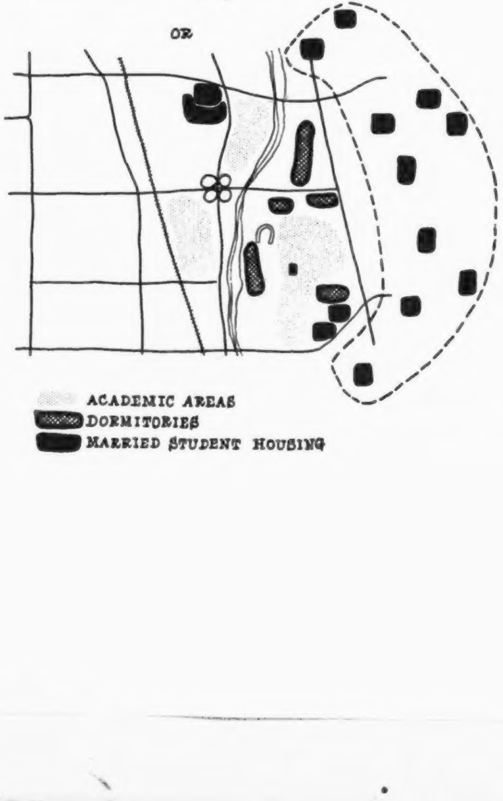
## Expansion by Consolidation

THE OHIO STATE UNIVERSITY. *The urban university that finds contiguous land difficult to obtain at reasonable cost may choose to expand by relocating entire colleges or departments on available land at some distance from the existing campus, or by increasing the density of land use within the confines of the campus. In developing a plan by which Ohio State could expand in an orderly fashion, the architects therefore presented university officials with two alternate schemes, one based on decentralization and the other on centralization. The centralized scheme has the advantages of maintaining campus unity and avoiding fragmentation of the University into a series of widely separated colleges to help offset the disadvantages of increasing the concentration of students and buildings in the limited land area of the existing campus. The zones set aside for housing in the decentralized scheme are indicated in gray on the plan below.*





Single Students' Housing. *The alternate locations of dormitories under the two schemes are shown in the diagrams at right. Note that in the second, decentralized scheme, housing is expanded to the north of the existing campus, where a new academic area would also be established. In the centralized scheme, housing is kept within the main campus by relying primarily on vertical expansion. In the two-block area at lower right of the diagram, five 11-story halls have already been built for 2,300 students*



Married Students' Housing. *Both of the schemes shown at right are based on the assumption that 2,000 units for married students will ultimately be required, but here the distinction between centralization and decentralization is less clear cut. In each scheme, an existing 200-unit project is expanded, and a 400-unit project for law and medical students is located at the southeast corner of the main campus. In the first, however, the remaining units are placed far from the academic areas on land that is needed for agricultural teaching and research programs. In the second, preferred scheme, these objections are met by placing the remaining required units in a crescent east of the campus. This arrangement has the additional advantage of helping to prevent deterioration of the neighborhood where fraternity and sorority houses, religious centers, and cooperative houses are now located, although it will require the acquisition of land that is already improved*

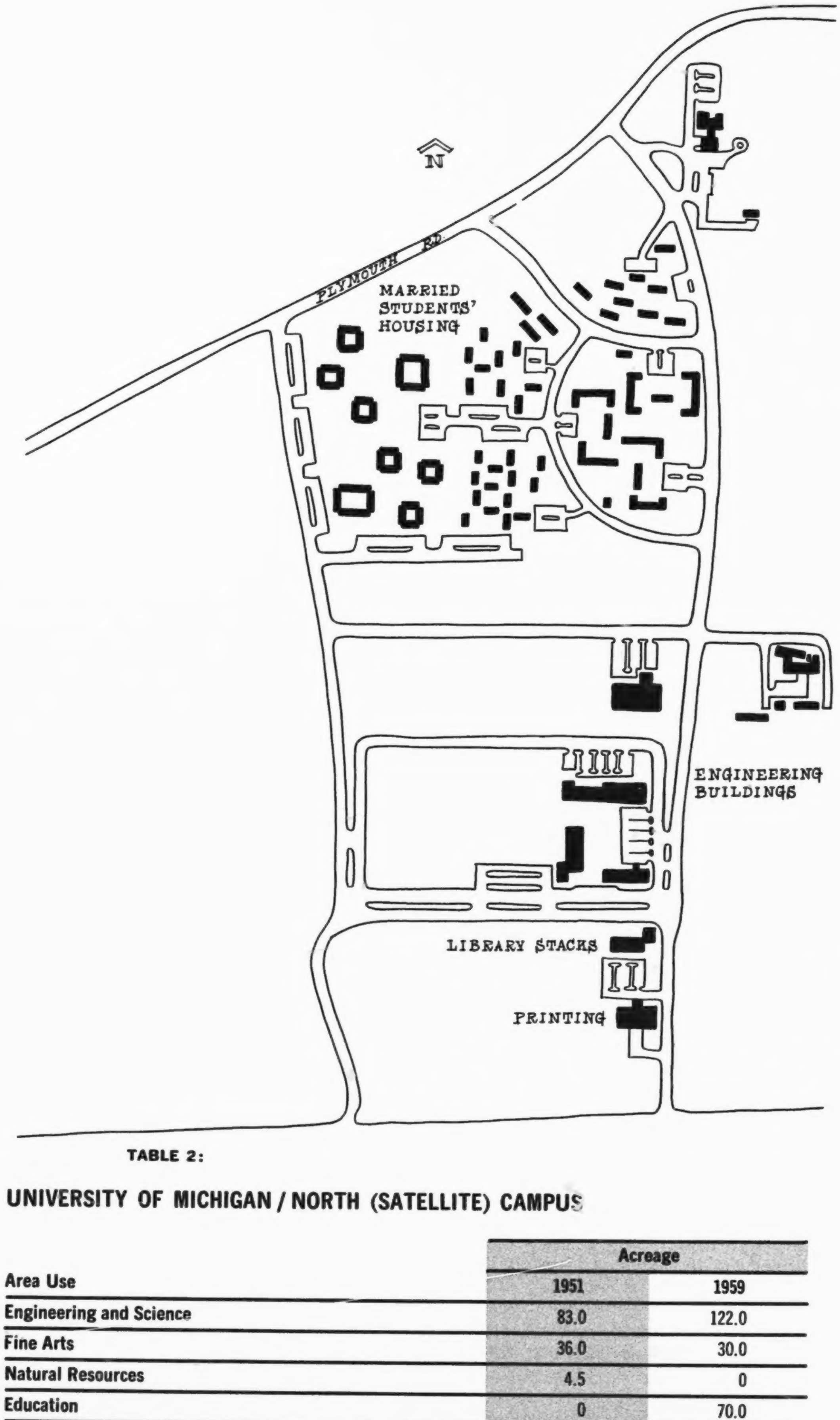
question of "how" remains. On most campuses, replacing all obsolete structures at once would be so costly and difficult as to endanger the chances of replacing any. The technique of tackling the problem bit by bit, eliminating the worst conditions first, is usually more practical. Carrying out replacement proposals in successive steps or stages also has the advantage of permitting continuous operation of the college during the long, slow process of rebuilding.

### The New Campus

The problems of acquiring land and replacing outmoded or unsafe buildings may reach such proportions that the only real solution is a new campus built from the ground up. Developing a campus from scratch is the dream of every architect and educator. But from the planning standpoint, the opportunities are equalled only by the problems: financing, time pressures, site conditions, and assembling an adequate staff for planning.

Recent experience in building new campuses is limited, but what there is indicates that at least four years, and probably six, are required between the decision to build and the arrival of the first students. About one planning year is needed to study the proposed site and prepare a preliminary master plan, and two to three more are consumed before working drawings can be completed, bids let, and the initial buildings constructed.

Another aspect is the relative cost of building anew versus expanding existing institutions. Referring back to the figures on square foot allowances per student, (p. 90) we see that expansion may theoretically save as much as 28 per cent in floor area over building a new campus simply because of the difference in requirements for instructional space. (175 square feet per student for new buildings as opposed to 125 for expansion.)


N
PLYMOUTH RD.
MARRIED STUDENTS' HOUSING
ENGINEERING BUILDINGS
LIBRARY STACKS
PRINTING

### Expansion by Extension

UNIVERSITY OF MICHIGAN. *The technique of expanding by bypassing the surrounding city altogether is illustrated by the University of Michigan's satellite campus, where married students' housing, an engineering school, and other facilities are operated semi-independently of the main campus. Even on the new campus, provision for growth was a primary planning consideration, a piece of forethought whose value is demonstrated by the expansion shown in Table 2 below*

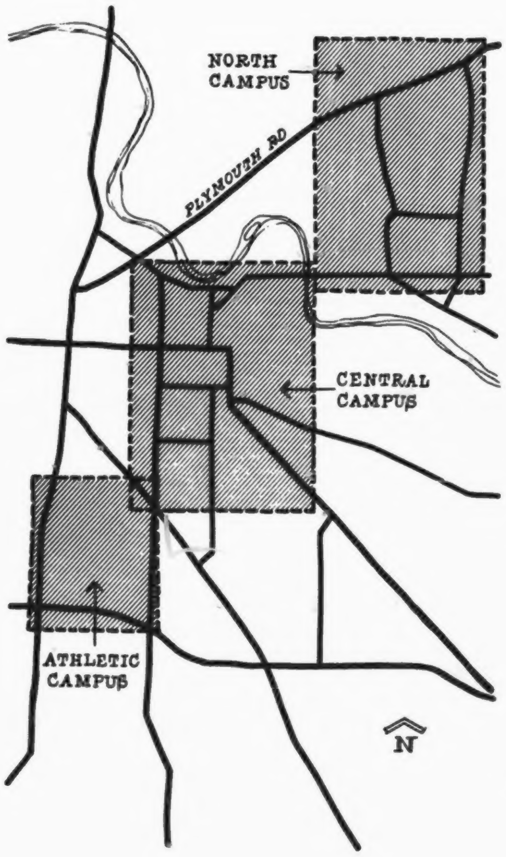

NORTH CAMPUS
PLYMOUTH RD
CENTRAL CAMPUS
ATHLETIC CAMPUS
N

**TABLE 2:**

**UNIVERSITY OF MICHIGAN / NORTH (SATELLITE) CAMPUS**

| Area Use | Acreage 1951 | Acreage 1959 |
|---|---|---|
| Engineering and Science | 83.0 | 122.0 |
| Fine Arts | 36.0 | 30.0 |
| Natural Resources | 4.5 | 0 |
| Education | 0 | 70.0 |
| Student Housing | 64.0 | 220.0 |
| Student Center and Food Service, Plant Buildings, Library Service, Printing and Warehouse | 13.5 | 14.0 |
| Landscape Features and Reserve | 144.0 | 22.0 |
| SUBTOTAL | 345.0 | 478.0 |
| East Area Reserve | | 411.0 |
| TOTALS | 345.0 | 889.0 |

If the recommendation of 200 square feet per student for instructional space is followed, the saving rises to 37 per cent in favor of expansion.

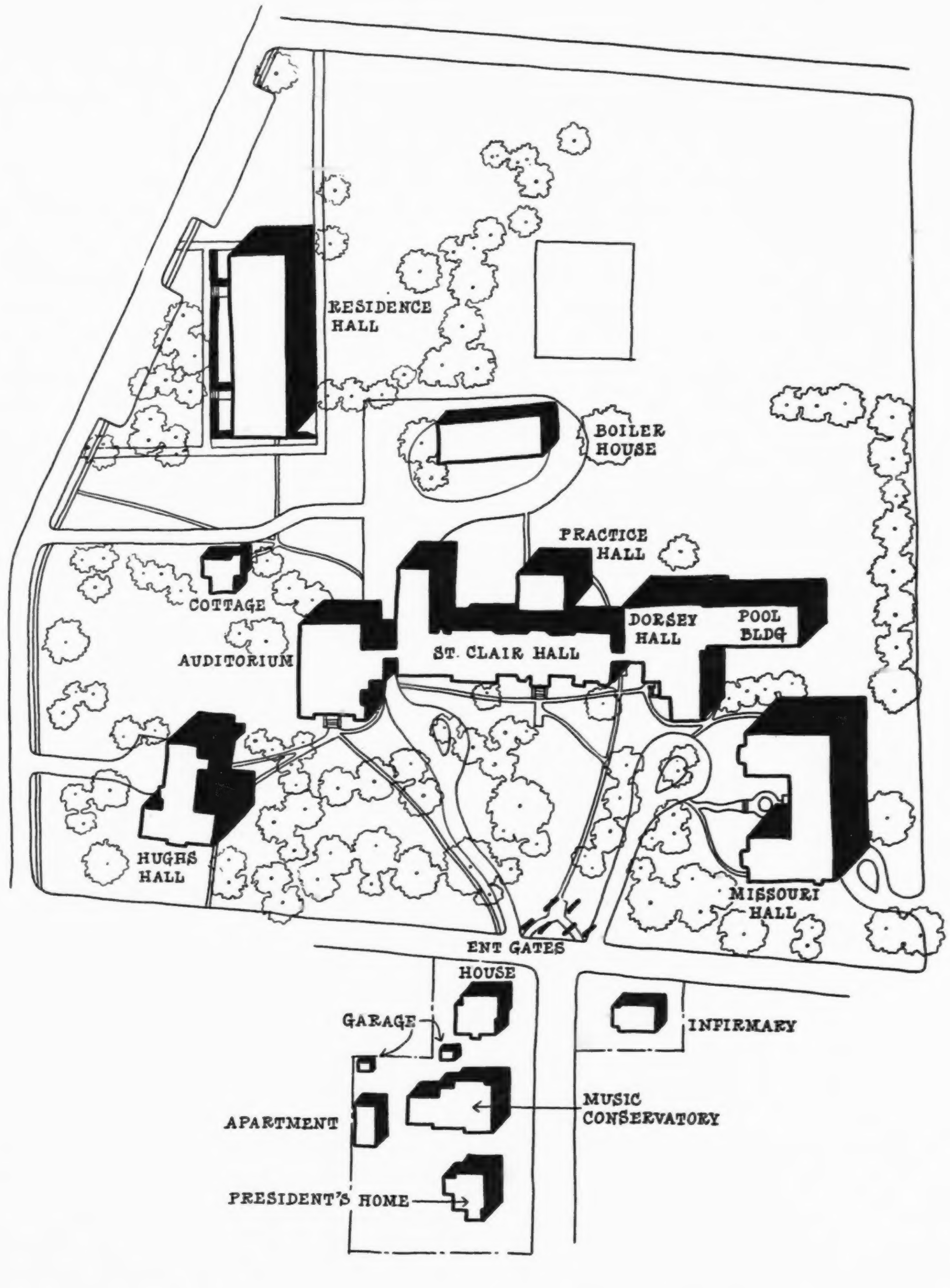
Of course, if an expansion program requires extensive new areas devoted to service and administration buildings, the library and other one-of-a-kind facilities, the advantages of expansion over establishing a new institution tend to disappear, but relative costs must in any case be carefully weighed. (An EFL study of this whole question of moving to a new campus or rehabilitating an existing one is now in preparation.)

## THE HOUSING MASTER PLAN

Planning a housing system to accommodate as many as 16,000 students in the not-too-distant future is no small undertaking, but this is precisely the size of the job some of our larger institutions face. The problem of the smallest residential college differs only in degree: every institution, regardless of size, needs at least a simple plan for developing a housing program that will facilitate orderly change and expansion. If it is to be effective, such a program should be based on sound answers to some specific questions.

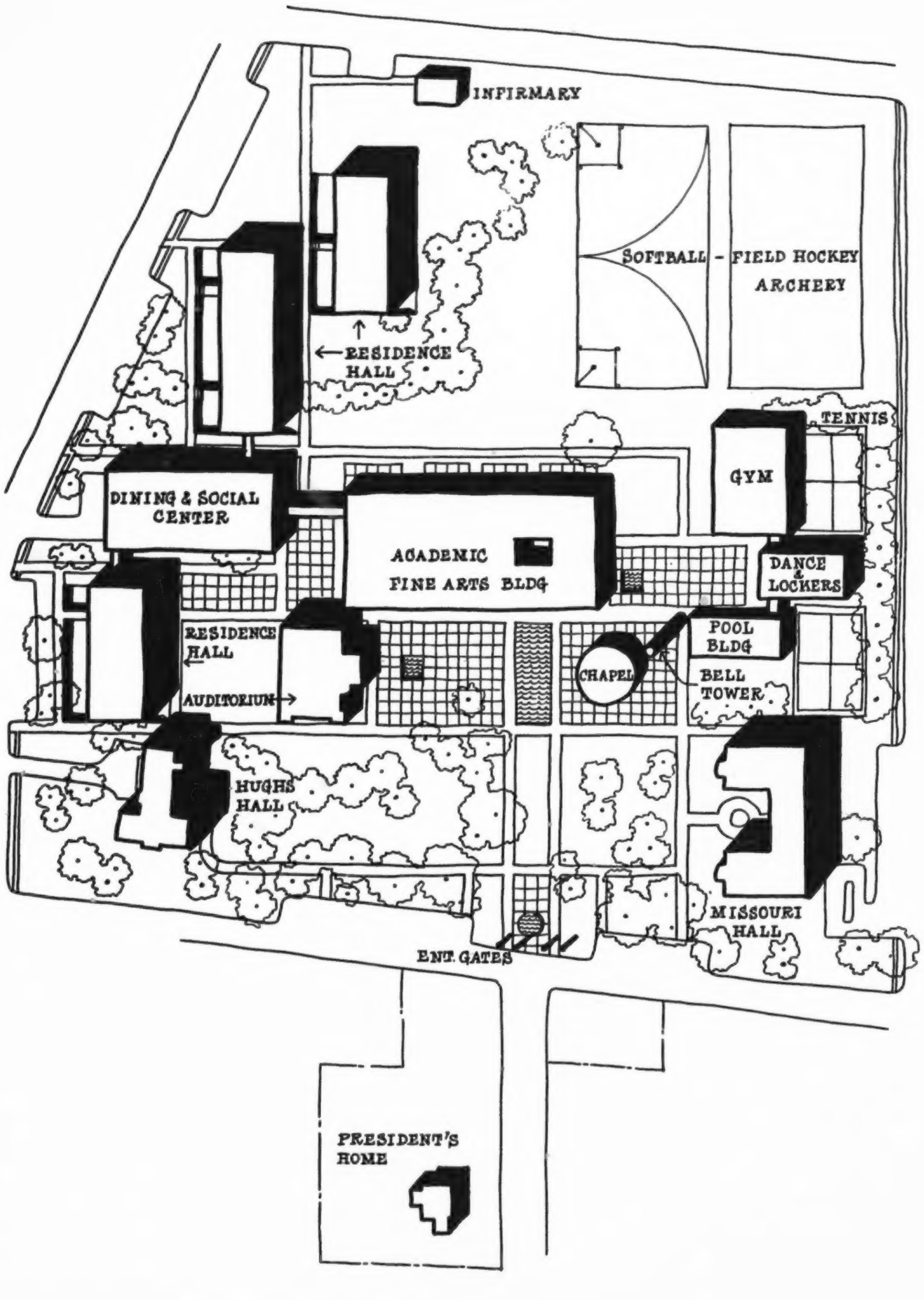
*Who is to be housed?* For what percentage of the student body and faculty is housing needed? Does this figure include the families of married students? How many students are to be housed on-campus? What controls are to be maintained over off-campus housing? How much off-campus housing is likely to be available? Is availability of housing to be used as a brake on admissions?

*How are housing construction and operation to be financed?* Are there safeguards against imposing an undue burden on the college economy as a whole? How are rentals to be kept at levels that students and faculty members can afford? Is faculty housing to be used to indirectly sup-



**Replacement by Degrees**

CHRISTIAN COLLEGE. *Orderly expansion may call for the rehabilitation of old buildings as well as the construction of new ones. Christian College's six-phase master plan, for example, locates new buildings and times their construction so that much of the existing plant will be replaced over a period of years, while student capacity is increased. The six phases are described briefly on the following page*


INFIRMARY
SOFTBALL - FIELD HOCKEY
ARCHERY
RESIDENCE HALL
TENNIS
GYM
DINING & SOCIAL CENTER
ACADEMIC FINE ARTS BLDG
DANCE & LOCKERS
POOL BLDG
RESIDENCE HALL
AUDITORIUM
CHAPEL
BELL TOWER
HUGHS HALL
MISSOURI HALL
ENT. GATES
PRESIDENT'S HOME

Phase 1, *which was shown on the preceding page, called for the construction of a new residence hall for 160 women (see page 37) to replace a frame cottage and reduce occupancy of a crowded existing hall.*

Phase 2 *calls for a new dining hall and social center, a new residence hall, and the demolition of an off-campus house now in use. At this point, enrollment can be increased.*

Phase 3 *calls for a new academic and fine arts building to replace two buildings used for classrooms and housing, and a new music hall.*

Phase 4 *calls for a new gymnasium and locker building.*

Phase 5 *calls for a new chapel.*

Phase 6 *(left) calls for a new infirmary and a third residence hall to complete the planned expansion*

*"Classrooms, labs, offices, libraries, dormitories, food services, playgrounds, walks, drives, and parking must constantly be rearranged to serve changing needs. When one structure goes up, campus development works like a chess game. In time, we may be able to exchange a pawn for a queen. The vitality of any university can be measured not only by the additions, which symbolize growth, but also by the capacity of the institution to convert spaces to new uses."*

**Buford L. Pickens**
***Washington University***

plement salaries or to attract young faculty members? Can the buildings' potential revenue be increased?

*How is housing related to the overall aims of the institution?* To its type, size and composition? To its teaching methods, curriculum, and faculty? To establishing or maintaining the general academic and social tone of the total institution?

*What are the general directives for the physical master plan?* Is housing to be located apart from academic areas? How is future expansion to be accommodated? Will more land have to be purchased?

*What level of quality is to be maintained in the buildings?* Are the buildings to be useful for purposes other than housing? Are such uses compatible with housing?

*To whom are the various responsibilities delegated?* For the housing program as a whole? For the successsive stages of programming and planning the buildings? For operation and maintenance? For making certain the buildings are used as intended?

### The Role of Policy

The answers to these questions are intimately linked to the institution's policies and operating procedures.

*Non-selective admissions policies*, for example, often create an artificial demand for housing by permitting students of limited ability to be assigned rooms while more promising applicants are turned away for lack of living space. With the high dropout rate that results, neither the instructional nor residential plant is operating at full capacity by the end of the fall term.

To cope with this situation, many institutions, public as well as private, have adopted more selective admissions standards so that students who are accepted have at least a reasonable chance of success, and the physical plant can be more fully utilized. The related problem of multiple applications—which also inflate the demand for housing—is being attacked by means of non-refundable application fees and earlier deadline dates.

Admissions policies also affect the makeup of the student body. Some colleges prefer a 50:50 ratio of men and women, which predetermines the amount of housing to be allocated for each. Some encourage married students, who must then be housed.

If housing planners ignore the implications of such policies, both the size and the composition of the student body will be controlled by available housing—a clear case of the tail wagging the dog. At some institutions, however—especially at public ones—the amount of housing available is deliberately used as a brake on admissions in order to keep enrollments down to manageable size.

*The curriculum* also influences housing requirements, primarily through its effect on the kinds of students attracted to the institution. A college that concentrates on engineering and science programs, which draw a heavy male enrollment, will obviously need more housing for men. Emphasis on developing a graduate school will increase the demand for apartments for married students.

Similarly, the addition of specialized departments or schools can change existing ratios of men to women as well as introduce special housing requirements. (Some new housing for art students includes special rooms for out-of-class work in painting and sculpture; housing for music students might include practice rooms.) Curriculum revisions may have an even more direct bearing on housing construction and use, if instructional facilities are included in the housing units themselves.

*Productivity* is another factor that is important both to housing costs and to housing use, although it is often overlooked. To take one example, if students are permitted to drop courses to a certain minimum in order to remain enrolled, they may take five years to complete work normally done in four, thus extending their use of the college and its housing by 25 per cent. Any measures taken to reduce the number of stragglers will increase productivity by making the facilities available to more students in a given period.

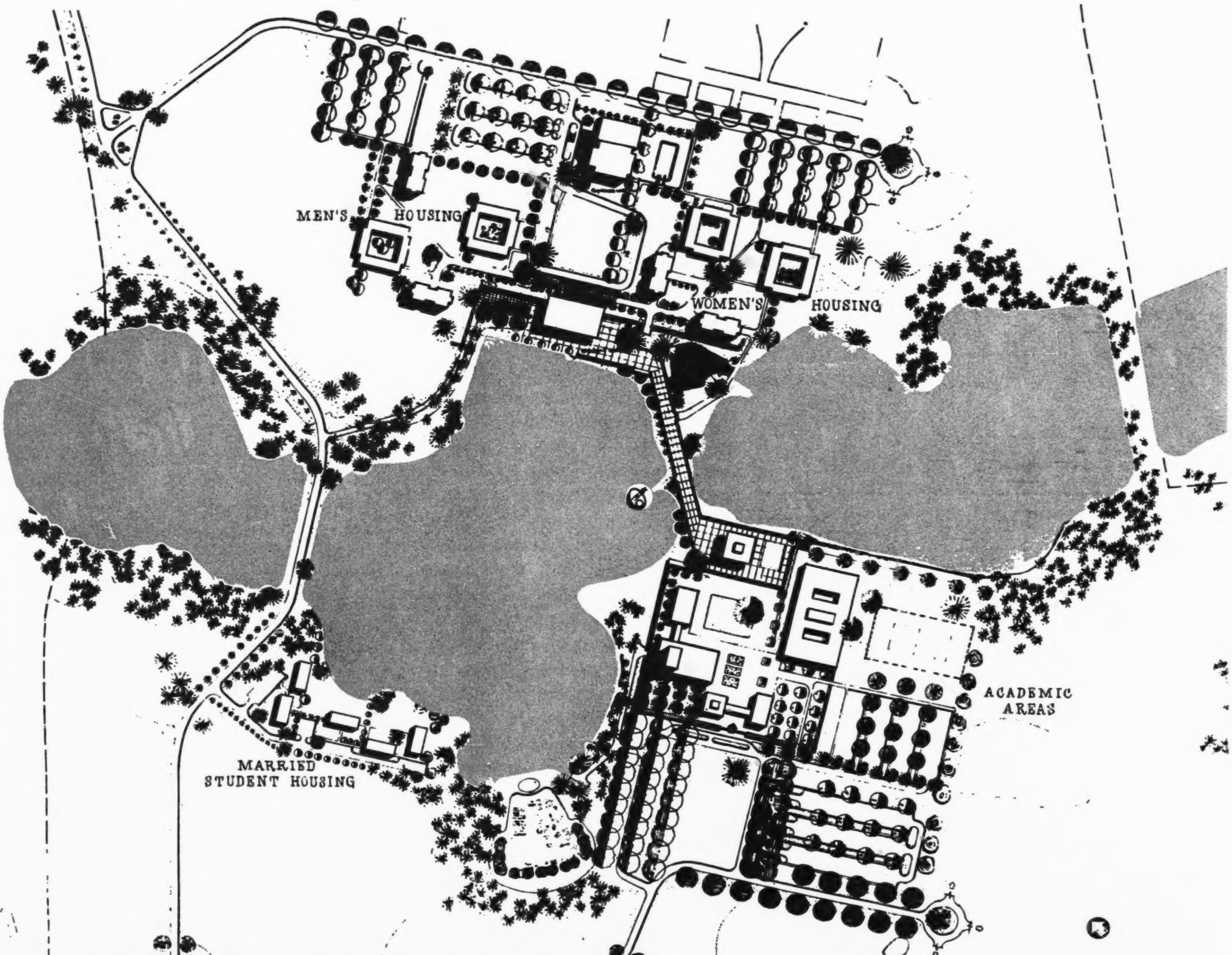
Another possible approach to increasing productivity is the addition of a fourth quarter or a third semester to the traditional academic year. Theoretically, such additions would enable colleges and universities to enroll up to a third more students with no change in existing plant, and would thus materially reduce the long-term need for additional housing and instructional space. However, greater plant utilization can probably not be accomplished without some additional cost. If students accept year-round attendance on a full-time basis, the intensified use of the housing plant and the need for more durable interior finishes and equipment will directly affect operating and maintenance costs as well as initial costs and building life. The case for such amenities as air conditioning will also become much stronger if college buildings are fully used for eleven months out of twelve.

### Selecting Building Sites

As is true of other aspects of housing, there is no single correct principle of site selection. In fact, the prime consideration is maintaining enough flexibility to change the approach to siting in response to new ideas and techniques, as well as to expand as needs increase. If only one site is available, the selection problem is solved before it arises. But the notion that only one site is suitable should be avoided until all the alternatives have been thoroughly examined.

### Starting From Scratch

ST. ANDREWS PRESBYTERIAN COLLEGE. *This new campus consolidates several small denominational schools into a single liberal arts college for 600 students. Housing and academic areas are located on opposite sides of a lake that will replace a swamp running across the site. Both areas will be expanded to accommodate an eventual enrollment of 2,500 students*


MEN'S HOUSING
WOMEN'S HOUSING
ACADEMIC AREAS
MARRIED STUDENT HOUSING

The suitablity of a site depends on several factors. There should be enough space, not only for the structure but for parking, outdoor recreation, access for emergency and service vehicles, and general breathing space. There should be some freedom for adjusting the building orientation to provide natural climate control or to take advantage of a view. Utility connections or funds for extending utilities should be available. Normal traffic patterns from the housing site to other parts of the campus should be reflected in the orientation and design of the building. Creative planning should take into account such natural features as trees and grades. Soil conditions, which may substantially affect building costs, should also be considered.

The location of housing in relation to other campus buildings may strongly influence other aspects of the total plan. For example, if the activity center is nearby, meeting rooms, recreation rooms, or food services may not be needed in the housing unit. Conversely, if these facilities are adequately provided in housing, the small campus may need no central activity center. If the library is some distance from the housing site, residential libraries and reading rooms may be expanded into branches of the main library. Other factors naturally play a part, but if building relationships are not considered, some decisions on buildings and facilities will be forced by the site instead of being based on good total planning.

Housing units may be located at the campus perimeter, clustered among instructional buildings, or even included in classroom structures. The typical campus plan sets aside separate areas for faculty, married students, and single men and women. Although many colleges have no choice but to continue this arrangement, others might consider bringing these areas into closer proximity so as to form a more unified campus community. If land is short however, housing can be placed on campus extensions or satellite campuses wherever land is available.

### Developing Building Programs

To be effective, the housing plan must deal realistically with both people and facilities, including not only buildings and equipment but also the relationships between buildings and all the outdoor spaces and facilities so often thought of as extraneous—parking areas, roads, walks, outdoor recreation areas, and landscaping.

One of the most important steps in planning is developing a good program of building requirements—one that is exact and specific as to types, sizes, and organization of spaces; critical dimensions; and the results desired from colors, finishes, and furnishings, and from such environmental controls as orientation, temperature, air flow, acoustics, and lighting. The good program is also clear as to the reasons for specific requirements, because an understanding of their purposes greatly improves the probability that the most appropriate techniques will be found and applied, and that the final structure will be more than just satisfactory.

The statement of building requirements for new housing can be detailed or brief, but it must be explicit in setting forth for the architect a summary of all the planning done for a new project and of the intentions of the planners. These are some of the topics that should be included:

*Objectives and policies:* Concept of use and operation.

*Project description:* Number, capacity, and desirable height of proposed buildings.

*Outdoor areas:* Pedestrian and vehicular traffic, parking, educational and recreational uses, landscaping.

*Utilities:* Including telephone system and facilities for trash disposal.

*Administration and staff:* Number and living accommodations required, student organization, housekeeping procedures.

*Food services:* Type and numbers to be fed, type of layout and equipment for kitchen, dining rooms and snack bars.

*Student rooms:* Number, type, size, equipment, lighting, decoration, arrangement of rooms to establish social groups.

*Circulation:* Corridors and stairs, elevators.

*Housekeeping facilities:* Storage, location and equipment.

*Student services:* Storage, laundries, lounges, recreation areas.

*Educational facilities:* Study areas, library, meeting rooms, display areas.

With these topics in mind, many planners also find it useful to prepare more detailed check lists for all parts of the project for use by the architect and for reference by the planners in reviewing completed drawings and specifications.

The program of building requirements should not be thought of as applicable only to new housing projects. It should also be a guide for the rehabilitation of existing housing. Rehabilitation is an essential part of any housing plan if the college is to avoid unfavorable contrast between old and new, unnecessary draining of operating or reserve funds into substandard units, or indirect penalties for late registrants or students with limited funds. Yet one often finds on the same campus attractive new halls for single students, converted barracks for married students and faculty, and run-down fraternity houses.

### Planning and Construction Time

Building new housing is an important and complex job. It is also time consuming. Judging from past experience, if a decision to build new housing is made today, the units will not be in operation for at least two years and possibly four. This being the case, an important aspect of the over-all housing plan is the timing of planning and construction to meet needs.

*Construction time*, to take the simpler element first, can be expected to range from 10 to 18 months for a residence hall for 200 students to 2 years for a building for 800 or more, although improvements in architectural and structural design and in construction methods have substantially reduced construction time in the recent past, and further technical improvements can be expected in the future.

*Planning time.* Depending on the time required for formulation of policy, the necessary research, and the assembling of data, preparing a good program of building requirements may take a few months or many. If the institution's records are so complicated and unclear that data on which to base decisions is difficult to obtain, the planning process may consume as much as four years. And even when the necessary information is readily available, planning rarely takes less than one year. A reasonable planning schedule might run something like this:

| | |
|---|---|
| 4 to 6 months: | *Preliminary Planning* |

Board approval for planning
Development of the program of building requirements
Development of financing plan
Selection of building site
Preparation of preliminary drawings

| | |
|---|---|
| 6 to 8 months: | *Advanced Planning* |

Preparation of final drawings and specifications
(Legal validation of bond issue)
Selection of contractor *or*
Advertising for bids
Award of contract

**TABLE 3:**

## ESTIMATING SPACE NEEDS BY PROJECTING ENROLLMENTS

| POTENTIAL TO BE HOUSED | 1961 | | 1962 | | 1963 | | 1964 | | 1965 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Enrollment | 15,733 | | 16,839 | | 16,847 | | 17,849 | | 18,929 | |
| Less Non-Resident Enrollment | 700 | | 700 | | 700 | | 700 | | 700 | |
| TOTAL | 15,033 | 15,033 | 16,139 | 16,139 | 16,147 | 16,147 | 17,149 | 17,149 | 18,229 | 18,229 |
| **CAPACITY OF AVAILABLE HOUSING** | | | | | | | | | | |
| Men | 2,932 | | 2,932 | | 3,616 | | 3,616 | | 3,834 | |
| Women | 3,057 | | 3,275 | | 3,593 | | 3,591 | | 3,475 | |
| Married Students | 1,337 | | 1,462 | | 1,462 | | 1,587 | | 1,712 | |
| Fraternity—Sorority | 2,900 | | 2,900 | | 2,900 | | 3,100 | | 3,100 | |
| Off-Campus | 3,784 | | 3,984 | | 4,039 | | 4,096 | | 4,157 | |
| TOTAL | 14,010 | 14,010 | 14,553 | 14,553 | 15,610 | 15,610 | 15,990 | 15,990 | 16,278 | 16,278 |
| **SPACE NEEDS** | | 1,023 | | 1,586 | | 537 | | 1,159 | | 1,951 |

*This table illustrates Indiana University's method of determining requirements for housing expansion. (Additional tables are prepared to specify the numbers of spaces needed for single men and women, married students, and graduate students.) The advantage of this procedure is that predictions as to enrollments and available housing can be checked against actual developments in time to adjust construction schedules as necessary to meet space needs. It is important, however, for the predictions to be reviewed and adjusted frequently. For example, since this estimate was prepared, indications are that enrollment predictions are too low, and that the percentage of women students is increasing faster than was anticipated.*

## PLANNING TECHNIQUES

Since the range of information required for good planning involves more individuals than can work efficiently as a committee, one common technique is to set up a steering committee that calls upon experts as they are needed. Such a committee logically includes an administrative officer familiar with policies and future plans, a faculty member representing a major department of instruction, the business officer, a student personnel officer, a representative of housing and food service management, and an architect. Each member should be able to serve as a communications channel for the exchange of ideas between the committee and the college community.

If it is to function well, such a committee needs authority delegated by the president and the board of trustees, and a clear definition of responsibility. It needs a chairman with vision, and a project coordinator who can organize the work into a clear statement of requirements.

Frequently, instead of such a steering committee, a subcommittee of the board of trustees, or the college president and his business officer, assumes the responsibility for planning. Personnel and housing officers or plant superintendents may be asked to give their views or, occasionally, to take over the planning job. The all-too-common problem is that those who plan new housing units are unaware of either the total educational program of the college or the purposes and daily operations of housing. Too often, much available planning information is neither sought nor used. Another recurring problem is a lack of clear delegation of authority and responsibility and consequent confusion, conflict, and duplication in planning projects.

In some states, planning for public institutions is handled by independent state agencies. The advantages of centralized planning are better coordination and greater resources. The dangers are disregard of each institution's unique requirements, over-standardization and, in some cases, lack of understanding of the educational program. These dangers can be headed off, however, if each college in the state system prepares reliable statements of its own requirements and retains the authority to make final decisions.

### Using Planning Consultants

Because planning problems are so numerous and complex, and because master plans need continual review, some institutions find it necessary to designate one qualified person who can devote most of his time to campus planning. At least 20 large universities employ full-time campus planners, and many other large and small institutions retain planning consultants to relieve college officials of impossible work loads, to supplement local knowledge with broader experience, or to resolve planning conflicts. Economists, land planners, some architects and educational consultants, and many experts in special fields have served in this capacity. Whatever their background, consultants must be capable of understanding the institution's problems and of examining them objectively. Their services may range from master planning to preparing detailed programs of building requirements.

### Selecting the Architect

The criteria for choosing an architect for college housing include ability, reputation, experience in designing similar projects, willingness to cooperate with the college planners, and accessibility. No matter how well or how badly educational planning is done, the architect can make or break the project.

One selection procedure is to invite a number of architects to discuss the project and their qualifications for undertaking it. In other cases, the choice of architect may be predetermined. In either case, the college may find it desirable to require one or more associate architects.

One common error is asking architects to submit preliminary proposals before they have been commissioned and before they comprehend the full scope of the problem. This is unfair to the architects and, worse, it is dangerous to the college. Preliminaries really set the pattern for development of design, and when they are prepared prematurely, they are apt to contain flaws that will be difficult to correct later. An architect's reputation for producing work that functions well, is economical, and conveys the qualities his client wishes to express is a better basis for selection than hastily prepared solutions to imperfectly understood problems.

The national office of the American Institute of Architects in Washington, D. C., and many local and state chapters of the A. I. A. can supply pamphlets and suggestions on selecting an architect.

### Presenting Master Plans

Planning results in a number of detailed reports and summaries of findings, along with recommendations and perhaps preliminary drawings. Before action can be taken, these must be reviewed and approved by the appropriate authority—usually the board of trustees—and there are times when alternatives must be presented and selected.

Since busy board members have limited time to consider the results of planning and to reach decisions, simplified visual presentations, with brief written comments as required, have many advantages. Models and diagrams reduce the possibility of misinterpretation and increase the opportunity to visualize relationships and to see the project as a whole.

# PAYING FOR THE HOUSING PROGRAM

COLLEGE HOUSING IS BIG BUSINESS and paying for it is rapidly becoming an exercise in high finance. In the past 10 years, more than $1 billion was spent for new housing. In the next 10, up to $6 billion will have to be spent—and more if construction costs continue to rise. Judging from the experience of the past decade, at least half of this expenditure for new construction will be borrowed.

A good credit rating for college housing is essential if investment funds are to be available in the large amounts required, at reasonable terms. But raising the money for the building program is only part of the problem of financing college housing. Hand in hand with it goes the day-to-day operation of what is in aggregate a multi-million dollar enterprise. A large university housing system may have a population of over 8,000, an annual operating budget exceeding $6 million, and a staff of more than 900 persons. And even at small colleges, housing looms large in proportion to the institution's total resources and program. How well these housing ventures are managed financially directly affects the financing of additional housing, not only by the individual college but by all colleges.

### INFORMATION PLEASE

The first requisite for sound financial management is sound financial information. Boards of trustees and presidents, who are being forced by the sheer size of the job ahead to formulate long-range financing programs, find it increasingly necessary to give their sources of funds a clear picture of the over-all dimensions of planned housing expansion and the total financial requirements. Private as well as public sources of funds demand accurate financial information to rate credit, guarantee loans, and justify donations or appropriations.

Business officers, therefore, are under pressure to develop and maintain better records of construction and operating costs. And at the same time, housing officers, in cooperation with faculty members and personnel officers, are finding accurate records more necessary than ever before in order to make their own cost analyses and to improve operating procedures.

Since borrowed funds for housing may represent so large a chunk of the total budget, difficulties in this area are likely to precipitate financial crises in unexpected sectors of the institution's economy. Too often, problems arise because the financial picture is so fuzzy that misinterpretation is almost inevitable. More standardization of accounting and reporting procedures is essential to determine actual financial commitments, to support the reputation of housing bonds, and to arrive at accurate cost comparisons and estimates.

### The Self-Liquidation Myth

One of the more persistent myths about housing finance is the widely held, wishful belief that college housing is entirely self-liquidating. To be self-liquidating, a project must have enough rental income to cover all expenses: annual operating costs, repayment of principal and interest, and accumulation of required reserves. Many housing projects that are announced, either explicitly or implicitly, as being self-liquidating are more likely to be self-supporting—that is, they earn enough gross income to cover gross operating expenses. Food services in housing may alter the picture if students pay for meals on a contract basis.

As a fair indication of the proportion of housing projects that are even potentially self-liquidating, revenues alone were pledged as security for only 37 per cent of the 425 loans made through the College Housing Loan Program in fiscal 1957–58. And in many of these cases, it is probable that other revenues are used to meet at least some project operating costs.

The evidence is that, at the rental rates generally charged, most college housing financed with borrowed funds requires some kind of subsidy, although the form and amount are seldom readily apparent in annual financial reports. Rising construction and operating costs rank high among the reasons that make subsidy necessary, but the compelling reason is that rentals would otherwise be more than students could afford.

### Fixing Rental Rates

There is general agreement that rental charges should at least cover annual operating costs—and they usually do. But opinion varies as to whether or not these charges should also reflect total project costs. One viewpoint is that students who use housing should be responsible for its total cost. Another is that residential facilities are part and parcel of the total physical plant, for which students are not expected to pay any sizable share of construction costs.

In practice, the latter view usually wins out, since rentals high enough to cover total costs tend to limit occupancy of campus residence units, and thus educational opportunity, to students from the upper economic brackets. In view of higher education's general aims, a compromise in determining room charges is unavoidable, and housing fees are unlikely to represent total costs even though the fees themselves vary widely from college to college.

To see why this should be so, it is only necessary to look at the rentals that would be required if students were to assume total project costs. The formula prepared by the Community Facilities Administration of the Housing and Home Finance Agency is:

$$\times = \frac{(i)\,(a) + b}{.9}$$

where × is the annual rental charge

per student; *a* is the annual cost of the construction loan per student; *b* is the annual operating cost per student; *i* is a factor of 1.35 which represents debt coverage (used specifically in the College Housing Loan Program); and .9 covers an annual vacancy loss of 10 per cent. (A larger vacancy loss may be anticipated for the first and second operating years of a new project at an institution that has not previously had housing. Vacancy may also be greater if a project is first occupied at any other time than the beginning of the fall term.)

A construction cost of $4,400 per student would require an annual payment for principal and interest of $190.34 (4.4 times $43.26, the annual payment per $1,000 for a loan at 3 per cent amortized over a 40 year period). Assuming an annual operating cost of $100 per student:

$$\times = \frac{(1.35)(190.34) + 100}{.9} = \$396.62$$

For a nine-month academic year, this amounts to $44 per month per student, or about twice the average per male student in a double room, according to the United States Office of Education's figures for 1960–1961.

It is true that the average is depressed by the number of small colleges at which rates are low. But it is also true that this formula assumes that total construction cost will be financed by borrowing which is amortized entirely from rental income, and that money can be obtained at an interest rate as low as 3 per cent. If the interest rate is actually 4 per cent, the annual rental charge per student is increased by about $7 per month and the monthly rental becomes over $50—which is considerably more than colleges feel they can charge.

To be sure, charges to students are rising, and if present economic trends hold, they will continue to rise. According to a United States Office of Education survey, room charges increased an average of 21.6 per cent at public institutions and 19.6 per cent at private institutions between 1954 and 1958. During the same interval, food charges showed corresponding rises of 7 and 8.2 per cent.

When rate changes are to be made, several criteria may be helpful, including charges for comparable facilities off-campus, regional cost-of-living indices, and, particularly, the effect of room and board costs on the student's total educational expense. This last factor is assuming increasing importance, not only in its own right but because it affects the economic condition of the institution as a whole. And this condition in turn influences decisions regarding additional indebtedness for housing.

## THE COST OF THE BUILDING

Economy is an attractive banner for cost-conscious college administrators to rally round, but economy at any cost may turn out to be very expensive. Obtaining true economy requires a three-ball juggling act in which advantage is taken of every initial saving that does not unduly increase long-term expense, and of every long-term saving that does not disproportionately increase capital outlay. The third ball is the effect of both on the way the building will function now and in the future.

To begin with, a residence hall that is not tailored to the college's program or to the needs of the people who will live in it is hardly a shrewd investment. Some administrators believe they can afford only study-bedrooms, group bathrooms, perhaps food services, and sometimes recreational space. Any other facilities are "nice but too expensive for us." Yet space for meetings and group study is usually the least costly in a residence hall: the lion's share of the construction cost is incurred as soon as the institution decides to build a housing unit and to provide it with the necessary mechanical systems.

Since major repairs or rehabilitation can be justified only after the building has been paid for, the building must be sound in the first place. Any reasonable device of design, construction, or equipment that will help hold up-keep within bounds and maintain the building's usefulness for the required four decades is worth considering even if it increases initial construction cost.

One example of the sometime economy of apparent luxury is a large urban university's decision to build residence halls with private or connecting baths so that going hotel rates can be charged when the facilities are used for summer conferences. Semi-private baths will increase construction cost by about 3 per cent; the increase in revenue is expected to be 20 per cent annually.

The converse is another college's attempt to save by substituting inferior hardware for that specified. The substitute had to be replaced after only a few years, thus multiplying hardware costs and transferring a share of the actual construction cost to the operating account.

Another pitfall on the road to economy is the tendency to make spurious cost comparisons between projects. It is perhaps understandable for the general public to gauge the cost of a residence hall by its outward appearance. But the college president or board member should know that if two seemingly similar residence halls vary widely in cost there are likely to be valid, if invisible, reasons for it. Insurance requirements, the nature and cost of land, policy regarding long-term costs, building codes, and special requirements for facilities can all increase first costs without being apparent to the casual observer.

### The Total Project Cost

Only the total cost of a project is a satisfactory basis for comparing it with others or for measuring its relative economy. The common practice of considering construction cost alone overlooks many items that strongly affect the final price tag on a project.

*Land cost.* Cash outlay for land may range from very high, if the project site must be purchased, to nothing at all if it is on the existing campus. Site preparation costs for putting the land in suitable condition for construction can also be low or high, depending upon surface and sub-surface soil conditions. Contingency clauses in development contracts safeguard all parties against such unexpected conditions as rock to be blasted, unstable soil, or variations in the depth of soil capable of carrying the necessary building loads. Landscaping is properly included in land costs although it is often absorbed by other budgets or left out all together.

*Construction cost,* strictly speaking, comprises only the contract price for the building. In some states, public institutions are required by law to let separate contracts for the several phases of building or the various construction trades—general contract, site development, structural, mechanical, and electrical—and private institutions sometimes follow the same practice. Separate contracts for furnishings and certain non-structural equipment are common, but fixed or built-in elements are usually covered in the general contract.

Construction cost may be given in dollars per square foot, per cubic foot or per unit (i.e., per occupant or assignable space). All have drawbacks and can be computed in different ways. Gross square footage does not indicate the efficiency ratio (net area divided by gross area) or account for the floor-to-floor or floor-to-ceiling height, which affects the space to be enclosed, heated or cooled, lighted, and painted. In high-rise buildings, the cumulative effect of story heights

**TABLE 1:**

### HOUSING CONSTRUCTION COSTS (1958-59)

| Housing Type | No. of Projects | Project Cost per Unit | | | Project Cost per Sq. Ft. | | |
|---|---|---|---|---|---|---|---|
| | | Average | High | Low | Average | High | Low |
| Single men | 229 | $3,663 | $6,370 | $1,560 | $16.92 | $27.06 | $7.87 |
| Single women | 182 | 4,154 | 7,543 | 1,635 | 17.29 | 26.07 | 8.32 |
| Married students | 58 | 9,573 | 14,600 | 4,792 | 14.39 | 20.77 | 9.96 |
| Faculty | 10 | 11,799 | 21,667 | 4,043 | 16.57 | 23.15 | 9.54 |

**TABLE 2:**

### PERCENTAGE DISTRIBUTION OF HOUSING OPERATING COSTS (1958-59)

| Cost Category | Number of Projects | % Total Operating Costs | | |
|---|---|---|---|---|
| | | Average | High | Low |
| Salaries and wages | 101 | 32.6 | 67.0 | 11.9 |
| Expenses | 101 | 28.8 | 57.3 | 5.4 |
| Operating capital outlay | 84 | 6.6 | 34.6 | .13 |
| Debt service | 87 | 32.7 | 77.0 | 3.6 |

*Note: Because data was not uniformly prepared or available, category averages do not total 100 per cent.*

**TABLE 3:**

### DOLLAR DISTRIBUTION OF HOUSING OPERATING COSTS (1958-59)

| | Men | | Women | | Apartments | |
|---|---|---|---|---|---|---|
| Cost Category | Number of Projects | Average Cost per Student | Number of Projects | Average Cost per Student | Number of Projects | Average Cost per Unit |
| Salaries and wages | 49 | $98.44 | 40 | $118.40 | 31 | $89.75 |
| Expenses | 49 | 86.78 | 40 | 89.09 | 31 | 171.22 |
| Operating capital outlay | 41 | 13.81 | 35 | 18.89 | 21 | 51.34 |
| Debt service | 37 | 96.22 | 35 | 89.74 | 21 | 307.85 |
| Total operating costs | 48 | 286.36 | 39 | 304.68 | 31 | 543.09 |

*Note: Because data was not uniformly prepared or available, average costs per student or unit do not add to the total.*

may substantially alter the cost of structural framing and foundations. Cubic footage is subject to even greater variation in interpretation and computation.

Cost per unit is usually the most satisfactory description of construction cost, provided that subsidies, the cost of all special areas, and allocations to other accounts are taken into consideration. It is the basis for estimating project income, and when it is evaluated against cost per square foot, usually indicates the amount of non-assignable facilities in the building. Non-rental space inflates the per-unit cost of a project even though cost per square foot may be low.

*Equipment not covered in construction cost* includes all movable items, such as furnishings for student rooms or public areas (except built-ins), and equipment for housekeeping or for food service. In some instances, bed linens and tableware are included. Drinking fountains, drapery hardware, bulletin boards, and similar items may be considered separate equipment or come under the construction cost. In order to reduce apparent cost, such substantial items as lighting fixtures, hardware, and even movable partitions are sometimes omitted from both the construction and equipment categories. Purchasing these items separately seldom saves much money, although it may enable an institution to simplify its stock of maintenance and repair materials. Often the omission is really a bookkeeping device that only complicates the determination of costs.

*Utility and service connections* may or may not be included in the construction contract but they should be covered. There have been cases in which no utility connections were provided because, under the terms of a loan, construction money could be applied only to work within a few feet of the building while utility supply lines ended some distance away.

*Interest* can be a serious financial burden during construction unless loans and/or bond issues are timed to coordinate with the need for funds. The more closely obligations at any given phase of the project are tailored to actual need, the less the total interest. When the money market is favorable, however, it may be wise to assume greater obligations than a project justifies at the moment.

*Fees* include all necessary services of architects, consultants and legal advisers; supervision of construction by the institution's clerk of the works or other qualified personnel; and administrative expenses properly chargeable to the project.

*Occupancy costs,* which are commonly underestimated or overlooked, include such expenses as installing furnishings and cleaning the building. The expense of general supervision while the building settles down into normal operation and minor kinks are ironed out may be considered project or operating cost, depending on local accounting practice. Since projects are not always available for occupancy when expected, additional financing may be needed to offset loss of income, and loan agreements sometimes provide for this situation.

*Contingencies.* About 5 per cent of project cost is usually set aside for unexpected expense in land development or construction and other normal emergencies that may arise.

### Typical Project Costs

For this study, the costs of 479 college housing projects constructed or planned in the five years prior to 1960 were analyzed from basic information made available through the Community Facilities Administration of the United States Housing and Home Finance Agency. These figures represent reliable estimates submitted in support of loan applications, but they do not necessarily include all final project costs.

For all types of projects, the average costs were $4,400 per unit and $16.38 per square foot. The averages according to type are shown in Table 1. In examining them, however, it is important to remember that averages are deceptive because of the great diversity in the projects on which they are based. For example, the data in the survey discussed here show a range of from $1,560 to $7,543 per unit and from $7.87 to $27.06 per square foot—both for single students. The variation in cost for married students and faculty is even greater.

The great range in costs suggests that many recently built housing projects are too cramped, too cheaply constructed, and too limited in facilities to be wise investments from the educational standpoint. Since most institutions find construction money hard to come by and high cost hard to justify, it is unlikely that the contrast in costs is caused by much waste in the more expensive projects.

Housing for all kinds of students and for faculty seems to cost more at private than at public institutions. Women's housing, according to this survey, costs more per student than men's, which implies that more area is allocated to women. As might be expected, married students' housing costs at least twice as much per unit as single students' housing, and faculty housing costs more than either. Apartments for married students have apparently been built in the greatest numbers at public schools, primarily those in the Midwest.

On the whole, regional variations in cost follow the pattern of construction costs generally. On the average, housing costs are highest in Northeastern and Middle Atlantic states;

lowest in the Southern and Mountain states; median in the North Central and Pacific Coast states.

When food services are included, project cost is evidently increased by 10 to 15 per cent because of such facilities' extensive requirements for mechanical and electrical services and special equipment.

### Estimating Future Project Costs

In the end, this survey and all others like it must be taken with a grain of salt. Considering the wide range of costs in all recent studies, and such variables as geographic location, time of construction, general economic situation, and the kind and quality of housing under consideration, it is impossible to make accurate advance estimates of housing cost. At best it is only possible to make informed guesses based on rough cost indices derived from survey information, past experience, and construction cost trends.

On the basis of data gathered in 1957–58 for its *Facilities Survey*, the United States Office of Education suggests an average cost for residential facilities of $20 per square foot and $4,700 per student. ($4,700 = $20 × 235 square feet per student, an area allowance that includes space for food services and is weighted to cover housing for both single and married students.) A 1958 American Council of Education study of expansion requirements uses the same averages.

During the next decade, however, the average cost for college housing of reasonably good quality is likely to be close to $5,000 per unit in the United States as a whole, although there will undoubtedly be considerable regional variation. There is no question but that housing *can* be built less expensively, but only at some sacrifice of both quality and usefulness. Moreover, cheap housing is likely to be such a drain on operating funds that the true cost of the

**TABLE 4:**

## SOURCES OF FUNDS FOR HOUSING OPERATING COSTS (1958-59)

| Cost Category | Number of Institutions | % Rental Income | | | % Other Income | | |
|---|---|---|---|---|---|---|---|
| | | Average | High | Low | Average | High | Low |
| Salaries and wages | 21 | 73 | 98 | 46 | 27 | 54 | 2 |
| Expenses | 11 | 56 | 99 | 6 | 44 | 94 | 1 |
| Operating capital outlay | 6 | 62 | 94 | 49 | 38 | 51 | 6 |
| Debt service | 10 | 56 | 94 | 0 | 44 | 100 | 6 |

*Note: Because data was not uniformly prepared or available, average percentages do not total 100 per cent.*

**TABLE 5:**

## HOUSING AND FOOD SERVICE STATEMENTS FOR SINGLE STUDENTS AT FOUR UNIVERSITIES (1958-59)

| REVENUE | A | B | C | D |
|---|---|---|---|---|
| Food service | 57.9% | 60.5% | 56.5% | 57.0% |
| Housing | 32.5 | 35.5 | 38.4 | 33.0 |
| Conference income | 9.2 | 3.1 | 2.1 | 9.7 |
| Miscellaneous | .4 | .9 | 3.0 | .3 |
| Total Revenue | 100.0% | 100.0% | 100.0% | 100.0% |
| OPERATING EXPENSES | | | | |
| Food | 24.1% | 25.7% | 23.1% | 22.6% |
| Wages | 34.4 | 24.9 | 33.0 | 31.3 |
| Administration | 6.2 | 9.2 | 1.1 | 7.7 |
| Social education | 3.3 | 2.7 | 5.2 | 2.3 |
| Utilities | 5.5 | 2.0 | 2.0 | .1 |
| Building repairs | 2.7 | 3.2 | 1.1 | 3.7 |
| Building depreciation | | | 3.8 | |
| Equipment | 2.7 | 6.8 | 3.2 | 3.9 |
| Laundry and dry cleaning | 1.7 | 1.7 | 2.6 | 1.9 |
| General supplies | 1.9 | 1.7 | 1.6 | 1.3 |
| China, glass, utensils | | .6 | | .4 |
| Insurance | .1 | .2 | .2 | .4 |
| Other | | 2.1 | .5 | .6 |
| Total Operating Expense | 82.6% | 80.8% | 77.4% | 76.2% |
| BALANCE AVAILABLE FOR FINANCING | 17.4% | 19.2% | 22.6% | 23.8% |

building over the entire period of amortization is almost certain to exceed the comparable cost of good quality construction. In many instances unit costs even higher than $5,000 will be justfiable in view of the facilities included, and the anticipated savings in operating costs.

## OPERATING THE PROJECT

From the financial standpoint, project and operating costs are two parts of one package. Annual operating budgets, including payments on principal and interest, day-to-day expenses, and income to cover both, must be determined before plans for building any project can be completed. Serious problems come up when operating costs are estimated too low and there is not enough income to cover them.

The information actually available on operating costs ranges from zero at some colleges to complete, accurate details at others. Accounting and reporting procedures are almost as varied as the schools themselves. Sometimes, operation has been centered in whichever department had enough manpower. In other cases, certain expenses have been shifted to, or continued in, other budgets so that reasonable room rents could be maintained. In short, many colleges are likely to find that they have very little information available for guidance in arriving at a reasonable budget.

### Typical Operating Costs

To gather more accurate information on housing operating costs, a limited survey of operating expenditures for the 1958–59 fiscal year was made by mailing questionnaires to 200 colleges and universities.

*Percentage distribution of operating costs.* (Table 2.) Total operating costs for the 96 institutions that provided usable data are roughly distributed as follows: one third, salaries

TABLE 6:

FOOD SERVICE OPERATING COSTS (1958-59)

| Cost Category | No. of Projects | % Total Operating Costs | | |
|---|---|---|---|---|
| | | Average | High | Low |
| Salaries and wages | 42 | 32.5 | 46.1 | 13.6 |
| Expenses, including food products | 42 | 55.6 | 67.7 | 39.5 |
| Operating capital outlay | 28 | 5.5 | 6.5 | .2 |
| Debt service | 24 | 15.6 | 34.0 | 2.0 |

*Note: Because data was not uniformly prepared or available, average percentages do not total 100 per cent.*

and wages; one third, expense and operating capital outlay, including major additions or repairs to buildings and equipment; and one third, debt service. The wide ranges between reported high and low percentages clearly indicate differences in accounting procedures. For instance, the range of 12 to 67 per cent for salaries and wages may mean, among several possibilities, that some of this cost has been charged to other budgets in order to commit a maximum of rental income to debt service. Or the high figure may mean that little or no debt service is required.

Reported debt service percentages range from 3.6 to 77, the latter obviously requiring subsidy of operating costs. For several projects not in the table, the entire gross revenue is pledged to debt service and operating costs are paid from other funds.

Counseling and guidance salaries account for 1.4 to 18.1 per cent. The average is 5.8 per cent for 53 colleges and universities. The low percentage does not necessarily mean that counseling is not provided. It may be charged against other funds in varying amounts, and in fact, there is often good reason to consider this cost part of teaching expense and chargeable to the general budget.

*Dollar distribution of operating costs.* Since some institutions consolidate their operating statements so that no analysis can be made of differences between operating costs of men's, women's, or apartment facilities, the number of projects reported on is reduced. Table 3 summarizes the major categories. At colleges and universities that furnished this information, women's housing cost more to operate than men's, while apartment housing cost more than either. The large difference in total cost per unit for apartment housing is an obvious result of the much higher commitment for debt service, and in some cases, the much higher cost of maintaining so-called temporary buildings.

About one-third of the institutions reported reserve funds, but only 12 of the 96 stated that depreciation was funded. Lack of reserves and of funds for replacement are serious problems in financing college housing. Fortunately, bond agreements usually require adequate reserve funds.

*Sources of income.* (Table 4.) Of the 96 institutions furnishing usable information, 34 indicated income from sources in addition to rentals—general funds, state appropriations, food services, special student fees, conferences, and charges for special services. Apparently the tendency is for these institutions to use this extra income to pay a part of salaries and wages—especially for guidance, counseling, and administration. The percentages of debt service paid from other sources underscore the problem of amortizing construction costs from rental income.

Table 5, which gives operating statements from four large universities, illustrates the importance of additional income in defraying housing costs. Note that costs for utilities and some salaries are not covered by the sources of revenue shown.

*Food service operating costs.* Percentage distributions of food service costs for the small sample (42 institutions) that furnished usable information are shown in Table 6. The spread between high and low suggests wide differences in operating procedures and accounting methods. The reporting institutions apparently do not charge substantial amounts of food services construction costs directly against operating income. Relative costs for salaries and wages seem similar regardless of the size of the college, but expenses, including food products, seem to be higher for institutions that enroll over 10,000. On the average, total dollar costs amounted to $450.80 per man and $495.74 per woman. Food costs were about 15 per cent less for women, but other major costs were higher.

## THE SEARCH FOR MONEY

Since many of the traditional methods of financing college housing construction now produce less money than they once did, colleges are being forced to explore new avenues and to exploit some of the old ones more fully. Gifts, state appropriations, federal grants, and bank loans are all used, but both public and private institutions have had to turn to bond issues as a principal source of funds.

### Borrowing Money

Recently a number of institutions have developed "open-end" financing plans, issuing what are sometimes called parity bonds to make maximum use of credit. Essentially, open-end financing provides for the issue as needed of additional bonds that have rights and priority identical to those of bonds already outstanding. However, before additional bonds can be issued, an earnings test is applied to the institution's current housing operations to make certain that a new bond series can be supported. With these plans, favorable interest rates can often be obtained, and revenues from facilities financed by one bond issue can help to support subsequent issues. The open-end plan is especially useful to institutions that foresee continuing housing expansion.

At the other end of the scale, some institutions have pledged more revenue, land, or other assets than necessary to secure loans, so that succeeding phases of a planned construction program have been held back. An institution that has pledged not only project income but also its full faith and credit has made housing a fiscal obligation of the institution as a whole. Such a contingent liability may diminish the institution's credit potential enough to prevent future borrowing for any capital or operating programs or even for normal day-to-day needs.

*Bond rating.* Although revenue bonds have become a principal source of income, colleges sometimes have trouble selling housing bonds at an interest rate they can afford. As the market broadens, demand may be expected to increase, and because of the greater demand, interest rates are likely to be reduced. One means of improving the private market is bond rating by the major investment advisory services. Housing bonds are not usually rated at present, but Standard and Poor have rated some.

*How much is it safe to borrow?* On the average, about 50 per cent of project cost can safely be financed with borrowed funds. As this proportion increases, more difficulties arise in balancing annual operating budgets. Apartment projects for married students and faculty are often an exception to this rule because supervisory and housekeeping expense for them is usually low, and because they produce income on a 12-month basis, whereas income from single student housing can usually be estimated only on an 8-, 9-, or 10-month basis.

*To supplement borrowed funds* for housing construction, many institutions use net income from food services and other auxiliary enterprises as well as state appropriations. Others pledge income from debt-free housing, special student fees, donations, and endowment funds.

### Assistance from Governments

As housing finance becomes an undertaking of major proportions, the need for good working relationships between colleges and government at local, state, and federal levels is intensified. Sometimes questions of taxation arise. More often, government is a source of financial support.

*Federal assistance.* In the past decade, the College Housing Loan Program, which was set up in 1950 as a division of the Community Facilities Administration of the Housing and Home Finance Agency, has made it possible for hundreds of educational institutions to approach satisfying the immediate demand for housing. By mid-1961, 1,370 projects to provide housing for more than 342,000 students and faculty members at about 1,000 institutions had been built under this agency's aegis, or were under construction, or had been authorized. At the same time, the Community Facilities Administration gave public institutions help in obtaining funds for advance planning.

In the beginning, there were fears that such a federal program would mean federal control. But as the program has evolved, colleges have been free to develop plans according to their own requirements once a proposed project has been reviewed for feasibility as to need, engineering, and financing. Furthermore, since the Community Facilities Administration has required that private possibilities be exhausted before a federal loan is granted, the program has helped to create a more favorable attitude among private investors. Criticism that the program is a federal giveaway has also proved unjustified, since the loans are being fully repaid.

Another promising area of federal support is the Urban Renewal Program, which will greatly reduce the cost of acquiring urban sites for both instructional and residential building construction. Under the urban renewal act (*U.S. Housing Act of 1959*), the federal government works with a local or community redevelopment authority which in turn works with the colleges and universities within its area. The possibilities include site acquisition at a 50 to 60 per cent mark-down, five-years retroactive credits, and benefits from the local authority's power of eminent domain. A few institutions are currently participating in developments of this kind, and several more have expressed active interest in them.

*Forms of state support* include direct appropriations, use of the state's borrowing power, and loans from state funds.

The Kansas legislature has provided for a continuing one-fourth mill levy on real and personal property to be used for housing construction at the five state institutions. Each school's share of the resulting $1 million per year income can serve to supplement revenue bonds.

In Connecticut, housing construction at state institutions is specifically authorized by the legislature through special acts which encourage more favorable interest rates by including approval of bond issues pledging the full faith and credit of the state.

In New York, a State Dormitory Authority gives both public and private institutions a means of getting housing bond issues into the market. Such issues are tax exempt but at present are not supported by the State's credit. However, it seems likely that more states will use their credit to back housing bonds as they realize the financial advantages of the resulting drop in interest rates.

*Local governments,* both county and municipal, also support many junior colleges, colleges, and universities. Traditionally most of these have been nonresidential, but many are now beginning to develop housing programs. If this trend continues, communities served by the college might be encouraged to contribute funds designated for units to house students from those communities.

### Special Types of Housing

A 1960 survey of *housing for married students* at 20 institutions showed that the primary source of funds for such units is revenue bonds, about half of which are purchased by the federal government through the College Housing Loan Program and half by private agencies. Other sources are institutional funds, notes, and state appropriations.

*Faculty housing* is financed similarly, although cooperatives are also currently being considered as a practical way of financing housing for faculty and some students. At New York University, for example, a cooperative faculty housing project with 178 units in its first phase is now being planned. A 10 per cent equity payment is to be required of each apartment owner, plus the usual monthly charge to cover annual operating and amortization costs, which are partially tax-deductible.

The same university also has a program for underwriting mortgage loans for individual faculty homes. Up to 90 per cent of the purchase price may be borrowed, with mortgage financing up to $30,000. A first mortgage loan is to be made by a large insurance company; a second, concurrent loan by the University. Repayment is by payroll deduction.

*Fraternity and sorority housing* has traditionally been financed by loans from local banks or alumni, supplementary loans from national organizations, and contributions from alumni and undergraduates. Some colleges, however, have built rental houses for these student groups or have made them direct loans.

Recently, a few institutions have sold revenue bonds to build on-campus fraternity and sorority houses. In such cases local chapters, usually through alumni corporations, have entered into lease agreements for the house and property, and have assumed responsibility for annual principal and interest payments, offsetting project and furnishing costs with funds from their own sources. One university has developed a group housing plan for fraternities, in which funds raised by the participating groups are deposited in, and become part of, the university's investment pool, and are not subject to refund if the group withdraws. National fraternity and sorority organizations might also develop guarantee funds to underwrite building loans.

### Improving Financing Techniques

Although it is doubtful whether any technique will result in housing that is self-liquidating, this end can certainly be approached more closely if it is pursued with imagination.

*Multiple use of housing projects,* for example, has many possibilities, especially for urban institutions. Facilities and services like private baths, meeting rooms, and air conditioning, which will encourage more use of the project by conferences and other special groups, will help to extend occupancy periods and increase income. Designing the lower floors of high-rise projects for commercial use on a year-round basis may mean additional services for students, faculty, and conference personnel and better relations with the surrounding community. Commercial use of buildings may also mean maximum rental income to help in amortizing project costs, to cover taxes on the commercial portion of the project, and to provide a tax return to the community to offset tax exemption.

*Conventional sources of funds* may also be further developed. Gifts and bequests designated for housing, for example, may make a much greater contribution than is presently believed if potential sources are stimulated by accurate information, properly disseminated. Even the use of alumni has not been fully explored, although one exception is the University of Massachusetts where alumni some years ago organized a Building Association chartered by the state as a private corporation. Through the sale of tax-exempt bonds at favorable interest rates, the Association raised about $13 million for student residences and a student center which, when constructed, were leased to and operated by the University.

A similar approach might be to use the resources of private corporations and foundations to create a better climate for marketing bonds and to gain favorable interest rates. For example, a large corporation or foundation might establish a loan guarantee fund that would help to reduce interest rates for loans thus backed.

*Pooling resources.* Another step in improving financing is for colleges and universities to pool information, develop ideas cooperatively, and work together to achieve mutual financing objectives. One example of the advantages of combining resources is the University Circle Foundation in Cleveland. Under this plan, some 33 institutions in the University Circle area, including Case Institute of Technology and Western Reserve University as well as hospitals, churches, art and music institutes, museums, and various training agencies, have combined their efforts to develop nearly 500 acres at an estimated cost of $175 million over a 20-year period. The cooperating institutions have agreed to vest in the Foundation responsibility for land purchase, siting and planning of buildings, and relationships with government agencies.

A similar, but less ambitious proposal by another group of colleges is a combined reserve fund to underwrite construction on several campuses.

# THE PROGRAM IN PRACTICE

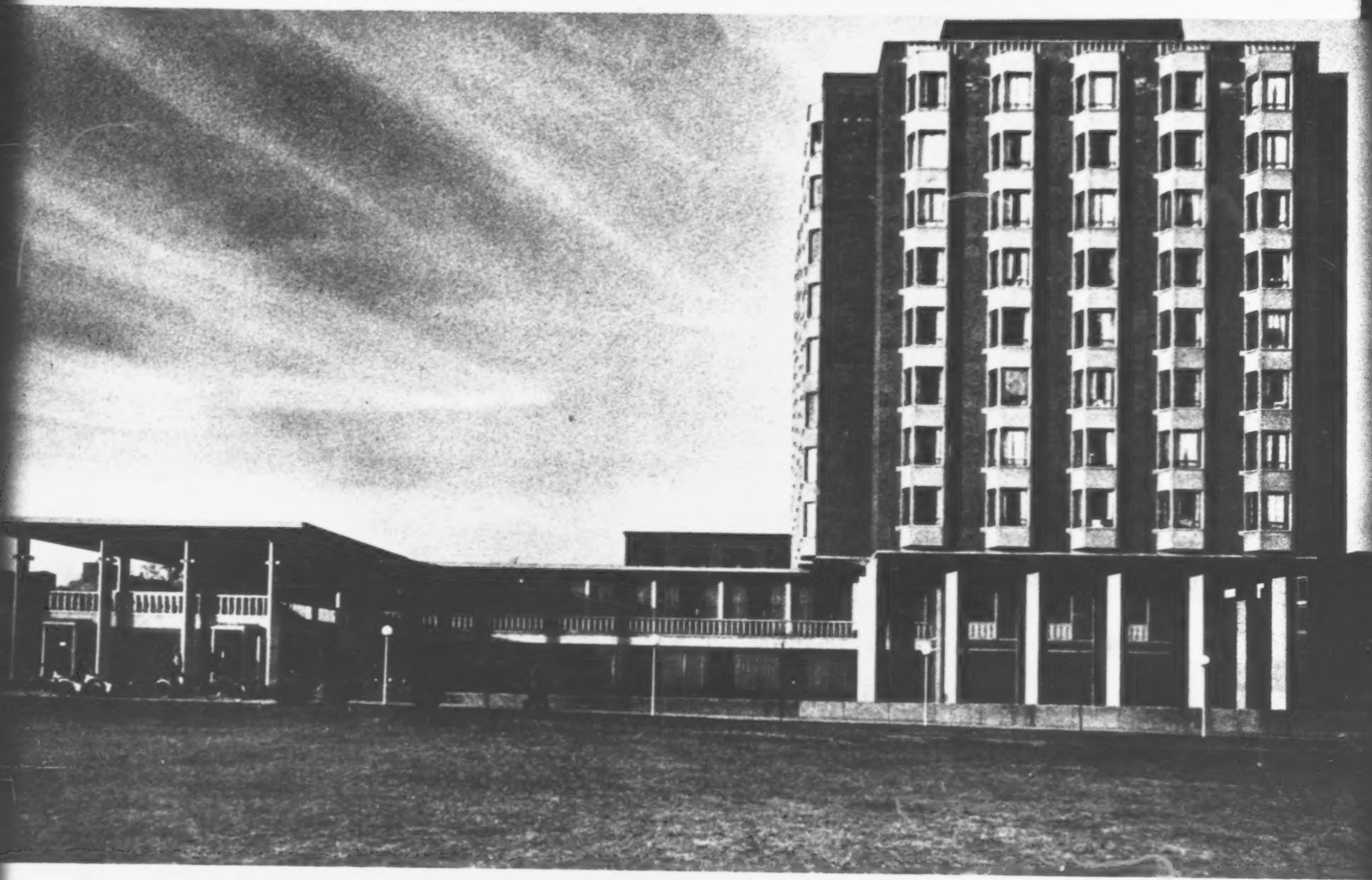
BECAUSE THEY ARE by their very nature general, the guidelines set forth in the preceding chapters lack a vital dimension until they have been used as a yardstick against which to measure actual buildings. This portfolio of recent college housing is intended to supply that missing dimension by providing a realistic framework in which the guidelines can be applied.

None of the housing projects shown follows all the suggestions made here. None can be considered ideal in every respect. But each is a reasonably successful attack upon the specific problems of a given college at a given time. That, in fact, has been the major criterion in selecting them. Cost has been considered only to the extent of omitting housing that was too cheaply built or too extravagant to be useful for general reference.

Given the criterion of success on the college's own terms, the variety of the projects is hardly surprising. There is variety among the colleges themselves. Large and small colleges and universities, public and private, are represented. So are most regions of the United States. Similarly, both urban and rural campuses are included to demonstrate the impact of land value and availability.

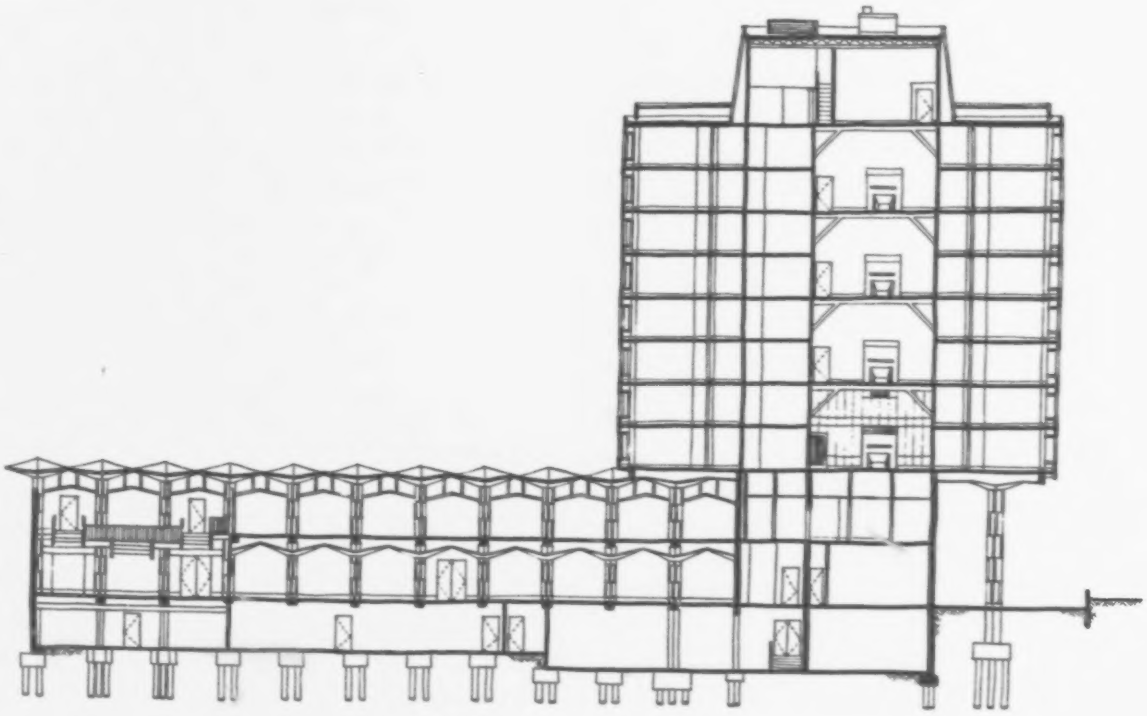
In some cases, housing built a few years ago is compared with more recent examples on the same campus to show the influence of experience on concept and execution. Sometimes economies of space and dollars have been achieved; sometimes certain features have been modified or expanded; sometimes there has been duplication almost without change when the original concept has successfully met an institution's particular needs. In all cases, data is presented in the same form so that the projects can readily be compared as to concept, facilities, and cost.

These projects by no means set standards—that each college or university must do for itself. They are merely examples, on the whole somewhat above the general average, of recent housing on a few campuses. But they embody ideas that may lead to even better housing on other campuses.



# CHICAGO'S URBANE URBAN TOWER

*For all its sophistication of design, Pierce Hall slips in quietly among its older neighbors, its brick and limestone exterior chiming in with nearby Collegiate Gothic structures, and its bay windows echoing the best of the early Chicago style. The low pavilion contains common spaces—lounge, recreation room, terrace, and dining room —as well as the single entrance (left in photo) required for security reasons. The tower contains student rooms in two-story houses arranged around shared facilities, including house lounges, in a central service core*



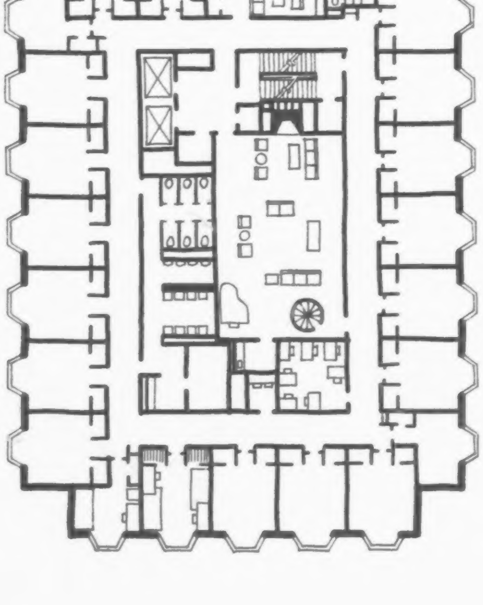
*Stanley R. Pierce Hall*

UNIVERSITY OF CHICAGO

*Chicago, Illinois*

*Harry Weese & Associates, Architects*

*The residential tower is divided into two-story layers, each of which constitutes a house with student rooms on the perimeter and service facilities in a central core. (The lower floor of a typical house is shown below.) In addition to vertical circulation, the core contains bathrooms, study and typing rooms, music rooms, and a two-story lounge for each house*



## Chicago's Urbane Urban Tower *(continued)*

WITHIN THE FRAMEWORK of the high-rise tower demanded by an urban site, Pierce Hall's house system sets up small, tightly knit student living groups whose evident sense of intellectual community derives partly from the nature and organization of the housing staff, and partly from the arrangement of the structure itself.

Physically, the building consists of a 10-story tower linked to a 2-story unit that contains the common lounge, dining rooms, and a basement recreation room. (A second residence tower to be built later will use most of the same common areas.) The first level of the tower contains housekeeping facilities; the second contains four guest rooms; and a penthouse provides space for a music room and a library.

But the heart of the student community lies in the four two-story houses that occupy the upper eight floors of the tower. Each is a self-contained living unit with rooms for 83 students ranged about the perimeter of both floors. Double rooms predominate, but each house also contains several single rooms, including one for the Resident Head's student assistant. The Head himself occupies an apartment on the first level.

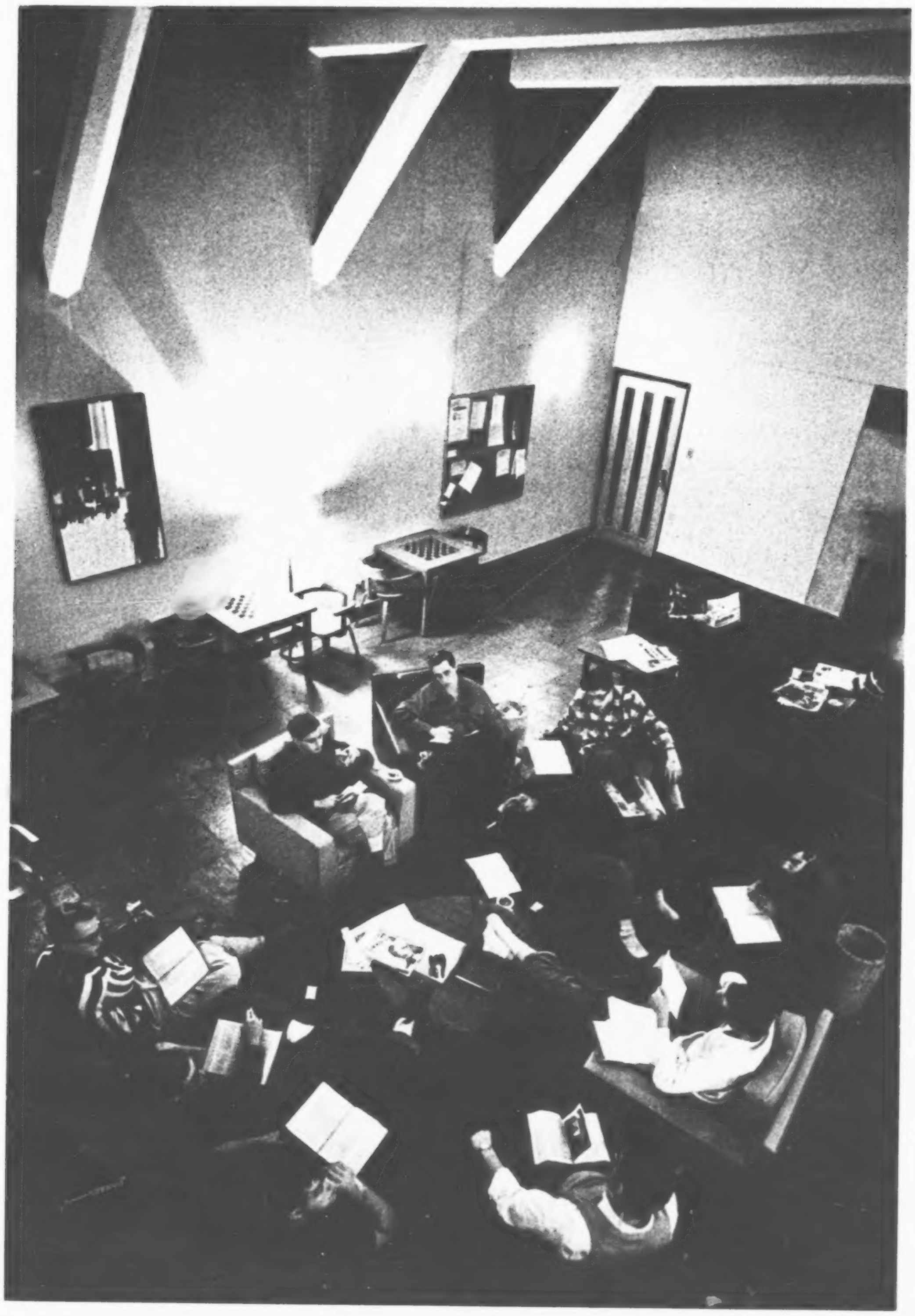
At the center of each house is a service core that contains the community bathrooms, study room, typing room, music practice room, stairways, and elevators. This central core also contains a two-story lounge accessible from both levels of the house. The focal point for house activities, the lounge is used for discussion groups, house meetings, and parties, as well as for quiet relaxation—chess, cards, or just plain conversation. The sense of house identity it embodies is further strengthened by such devices as assigning the four houses to four separate sections of the dining room.

Whenever possible, the Resident Head for a house is selected from among the faculty. His assistant is either a graduate student or a senior. In addition, each house has eight Faculty Fellows who lunch regularly with house members, invite them to their homes, and attend the house meetings and programs.

It is largely because of the resulting close ties between faculty and students that the Director of Housing—himself a faculty member—can report: "Our strength is in our academic orientation. . . . Stressing intellectual activity in the residence halls . . . is not a problem for us. This is the natural place for intellectual conversation, for developing an interest in the humanities, and for practical [social] experiences."

The intellectual activity he mentions takes a number of forms, with a fair share of it sparked by the students themselves. The house councils, for example, initiate discussion programs that are participated in by faculty members who come for dinner and stay for debate. Other discussion groups that meet regularly in the house lounges are, in effect, seminars on specific courses, particularly in the humanities. The older members of the house lead how-to-study sessions for the younger students. And, as might be expected in such a discursive climate, full-scale bull sessions are the order of the day.

Ammunition for these discussions is often provided by house-sponsored concert and theater parties, or by the art shows held in the public areas. The students also have a unique opportunity to view art privately in their rooms. From a collection loaned to the University by a Chicago citizen, they can borrow, to live with for a term, original paintings by such artists as Picasso, Braque, and Miro.



*Right: The spacious interior lounges are the natural center of house activities—educational as well as social. The students here, seen from a vantage point on the circular staircase that leads to the second floor, are taking part in one of a series of regularly scheduled discussions. The topic at hand is "Romeo and Juliet." Below left: The dining hall, where each house is assigned its own section, is also a center for discussion, usually unscheduled. This time the debate is T. S. Eliot, pro and con. Below right: Because he occupies an apartment (living room, bedroom, bath and kitchenette) in the house, the Resident Head is always on hand for informal counseling or conversation*

*The bay window in each room helps dispel identical-boxiness, adds space, and, as the architect points out, creates "an eyrie from which one can look out over trees and roofs in three directions." In addition to the usual bed and desk, rooms are equipped with walk-in closets, picture moldings, and continuous shelves for books*

*The carefully fitted closets include plenty of room for luggage on the top shelf, and for clothes on the hanging rod at right. Foldable items are stored on shelves at the back of the closet. Below the shelves is a drawer for toilet articles and a bin for soiled clothes. There is also a well-lighted mirror*

## Chicago's Urbane Urban Tower *(continued)*

### PROJECT SIZE

| | |
|---|---|
| Number of floors | 10 |
| Number of students, including student staff | 332 men |
| Total area | 102,814 sq. ft. |
| Per student | 310 sq. ft. |

### SPACE ALLOCATION

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 37,650 | 36.6 | 113.4 |
| Lounge-Recreation | 10,050 | 9.8 | 30.3 |
| Toilets-Showers | 5,750 | 5.6 | 17.3 |
| Kitchen-Dining | 8,800 | 8.6 | 26.5 |
| Service-Laundry | 10,400 | 10.1 | 31.3 |
| Storage | 7,250 | 7.1 | 21.9 |
| Corridors-Stairs | 16,700 | 16.2 | 50.3 |
| Other | 6,214 | 6.0 | 18.7 |
| TOTALS | 102,814 | 100.0 | 309.7 |

### PROJECT COSTS

| | |
|---|---|
| Total, excluding land and furnishings | $2,237,650 |
| Per student | 6,740 |
| Per square foot | 21.76 |
| Furnishings, total | 200,000 |
| Per student | 602 |

**PLAN ORGANIZATION**—Two towers (one existing, one future) contain student rooms; a two-story connecting unit contains common facilities.

| | |
|---|---|
| House organization | 4 houses, 2 floors each |
| Students per house | 83 |
| Students per floor | 39 and 44, alternate floors |
| Double rooms | 18 and 20, alternate floors |
| Single rooms | 3 and 4, alternate floors |
| Double room dimensions | 10 ft. 6 in. by 13 ft. 6 in., plus bay window |
| Bathrooms, community | 1 per floor |

### EDUCATIONAL FACILITIES

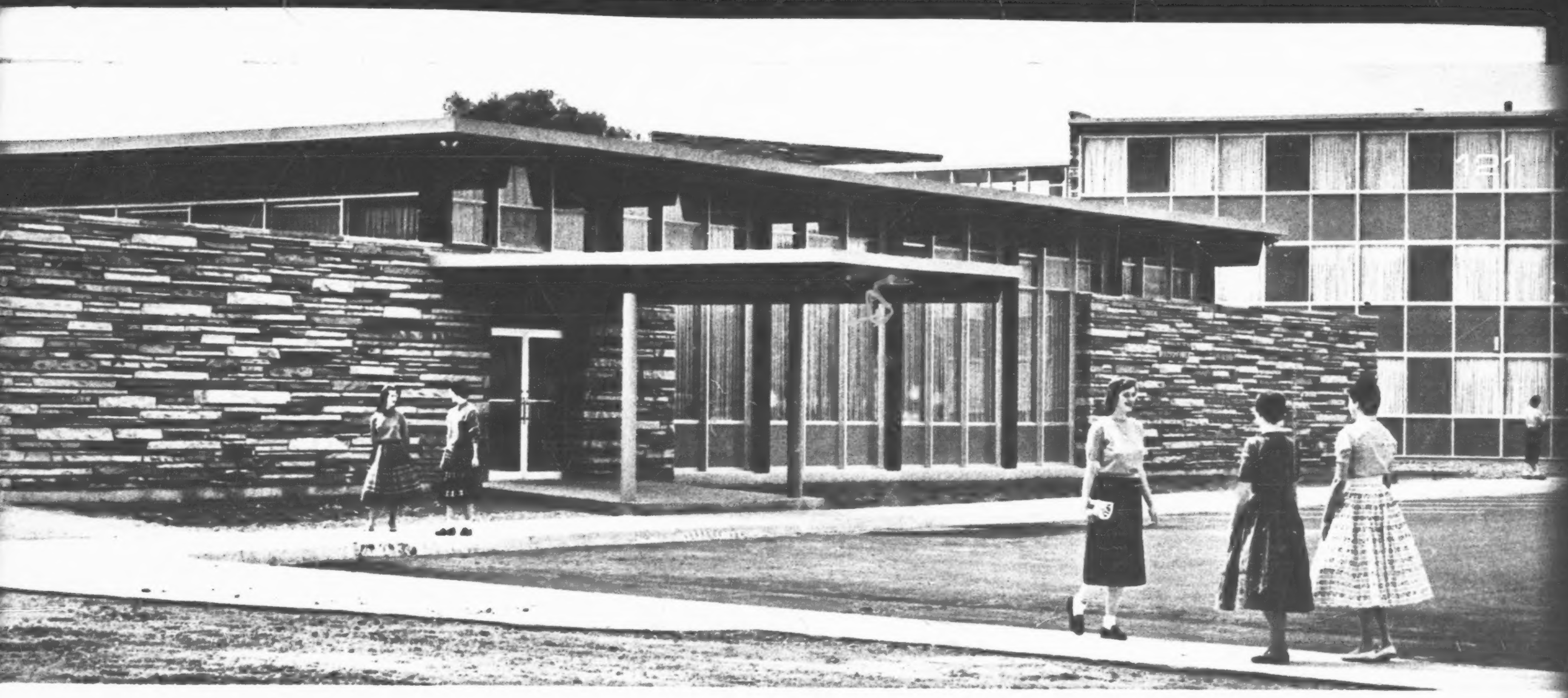
| | |
|---|---|
| Desks and bookshelves | in student rooms |
| Typing rooms | 1 per house |
| Study rooms | 1 per house |
| Music practice rooms | 1 per house |
| Library, music room | in tower penthouse |
| Other | house lounges, see below |

### OTHER COMMON FACILITIES

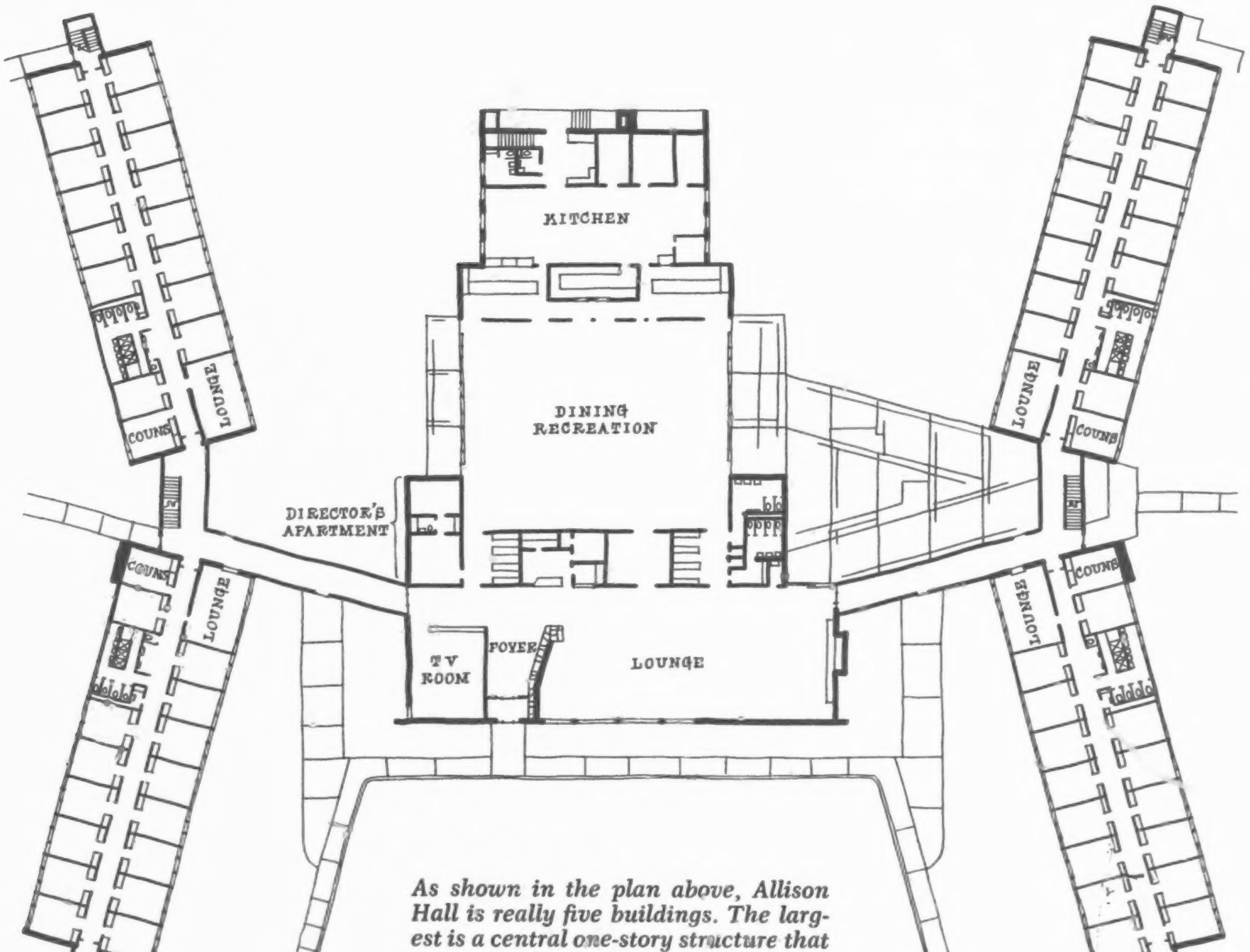
| | |
|---|---|
| House lounges | 1 per house, 2-story |
| Kitchenettes | 1 per house, adjoining lounge |
| Main lounge | in 2-story unit |
| Main lobby | in 2-story unit |
| Recreation rooms | in basement of 2-story unit |
| Outdoor recreation | patio-terraces in 2-story unit; 1-acre playing field adjoining building |
| Food service | cafeteria in 2-story unit |
| Dining rooms | 1 large with separate sections for each house; 1 private |
| Kitchen | 1, serving all dining rooms |
| Snack bar | below dining rooms |
| Guest rooms | 4, on second floor of tower |

### SERVICE AND HOUSEKEEPING AREAS

| | |
|---|---|
| Staff rooms | 1 suite per house for Resident Head; 1 single room per house for student assistant |
| Main office and desk | in main entrance lobby |
| Mail | in main entrance lobby |
| Communications | telephones in public areas |
| Housekeeping | each floor; main facilities in lower floors of tower |
| Student storage (bulk) | built-in in students' rooms; storage rooms each floor |
| Laundries | 1 per floor |



# COLORADO REPEATS A SUCCESSFUL PATTERN


KITCHEN
DINING RECREATION
DIRECTOR'S APARTMENT
LOUNGE
COUNS
LOUNGE
COUNS
LOUNGE
COUNS
LOUNGE
COUNS
LOUNGE
TV ROOM
FOYER

*As shown in the plan above, Allison Hall is really five buildings. The largest is a central one-story structure that contains food services, the main lounge, and administrative spaces. Flanking this building, and connected to it by glass-walled arcades, are four living units, each housing 103 students*

*Allison Hall*

COLORADO STATE UNIVERSITY

*Fort Collins, Colorado*

*James M. Hunter & Associates, Architects*

## Colorado Repeats a Successful Pattern *(continued)*

ALLISON HALL IS THE LATEST model in a series of five halls cut to the same basic pattern—a pattern that has been thoroughly use-tested since the prototype went into operation in 1954. The advantage of this system of finding a workable formula and sticking to it is shown in the figures on page 124, which reflect the fairly consistent drop in cost as the design team gained in experience.

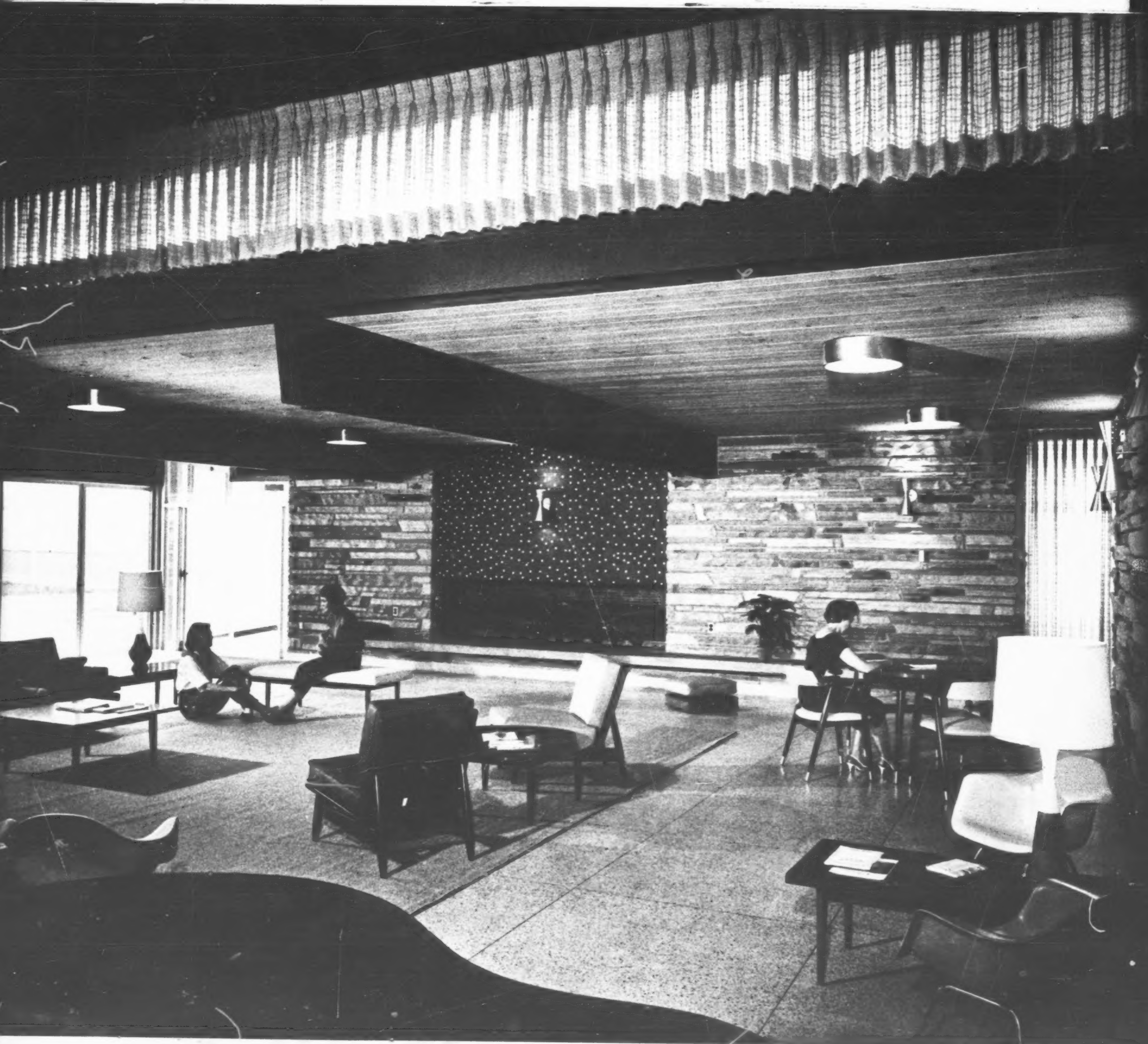
Behind the basic concept is the belief of the university planners and their architect that it is possible to create a favorable climate for living and study within the bounds of initial and continuing economy. Hence the use of attractive but easy to maintain materials—native stone, exposed brick, terrazzo, and glass and metal curtain walls—enriched by judicious amounts of wood and cork. And hence the decision to assemble a student population of a little over 400 in a single hall, for economy of operation and feeding, but to split this large group up into smaller, more intimate living groups. As a result, each hall is actually a combination of five buildings, with glass-enclosed arcades linking four living units to a central commons. Each of the living units houses 103 students, who are further divided into three floor groups.

Depending on the particular site, the commons buildings are one or two stories high—one story in the case of Allison Hall. Facilities include an information desk flanked by offices and mail boxes, a large main lounge with adjoining television room, the dining room and kitchen, and storage and service areas. The dining room doubles as a group study space, and is equipped with collapsible tables so that it can easily be cleared for parties and dances. However, the commons includes no snack bar or recreation rooms. In order to isolate distracting noise and activity, these spaces are relegated to the student center, which is located between the men's and women's halls.

The two wings branching out from the commons are each formed by two three-story units connected by an enclosed stair tower that reduces the number of stairways required for the two units from four to three. Each of the living units has its own lounge for meetings and study, and has laundry and ping-pong rooms in the basement. Except for the single rooms (one per floor) assigned to the student staff, the student rooms are all doubles served by community bathrooms on each floor. They open off double-loaded corridors, but the resulting noise problem is at least partially overcome by closets built in along the corridor walls.

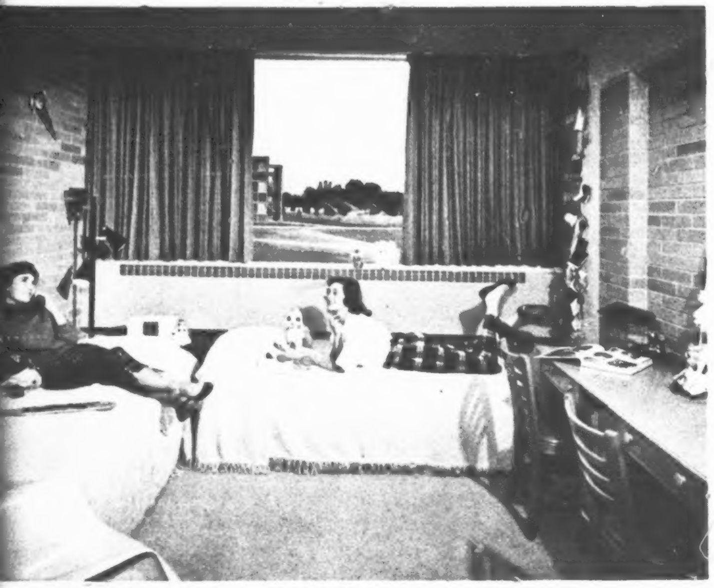
Allison Hall, like the other women's residence, is directed by a mature woman who occupies a small apartment in the commons building. In addition to her administrative duties, she oversees the twelve student assistants who serve the hall. One Senior Student Assistant supervises each of the four living units, assisted by two other student counselors.

*Below: Natural materials, neatly juxtaposed with metal and glass, appear again in this view from the main lobby through the glass-enclosed arcade to a student room wing beyond*



*In Allison Hall's main lounge, the fireplace, the exposed beams, the clerestory, the natural materials, and the casual furniture add up to an atmosphere of warmth and informality*

*The dining hall is equipped with collapsible tables so that the space can easily be cleared for parties. It is also used for group study. The folding doors at right open to serving stations*



*Student rooms, all of them double, create an impression of openness and order. Drawer storage is included in the built-in closets flanking the door, so that bulky chests are eliminated from the room proper. Other furniture is movable, and can be arranged according to the whims of the students. The convector beneath the wall-length window is raised to sill level to avoid damage to its cover plate*

## Colorado Repeats a Successful Pattern *(continued)*

| Hall<br>Date Occupied | GREEN<br>1954 | NEWSOM<br>1955 | AYLESWORTH<br>1957 | ELLIS<br>1957 | ALLISON<br>1958 |
|---|---|---|---|---|---|
| **PROJECT SIZE** | | | | | |
| Number of floors | 3 | 3 | 3 | 3 | 3 |
| Number of students, including student staff | 404 women | 412 men | 412 men | 412 men | 412 women |
| Total area, sq. ft. | 99,114 | 103,418 | 85,814 | 85,814 | 92,452 |
| Per student | 245 | 251 | 208 | 208 | 224 |
| **PROJECT COSTS** | | | | | |
| Total, excluding land, furnishings | $1,509,628 | $1,413,667 | $1,380,326 | $1,339,652 | $1,391,778 |
| Per student | 3,737 | 3,431 | 3,350 | 3,252 | 3,378 |
| Per square foot | 15.23 | 13.67 | 16.09 | 15.61 | 15.05 |
| Furnishings, total | 103,496 | 97,829 | 86,534 | 86,594 | 87,000 |
| Per student | 256 | 237 | 210 | 210 | 211 |

**PLAN ORGANIZATION (ALLISON HALL)**—Four wings radiate from central one-story commons building.

| | |
|---|---|
| Students per wing | 103 (typical) |
| Per floor | 31 to 36 |
| Double room dimensions | 11 ft. 8 in. by 16 ft. 3 in. |
| Bathrooms, community | 1 per floor, each wing |

**SPACE ALLOCATION**

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 41,216 | 44.5 | 100.0 |
| Lounge-Recreation | 6,402 | 6.9 | 15.5 |
| Toilets-Showers | 5,613 | 6.1 | 13.6 |
| Kitchen-Dining | 8,944 | 9.7 | 21.7 |
| Service-Laundry | 3,430 | 3.2 | 8.3 |
| Storage | 1,500 | 1.6 | 3.6 |
| Corridors-Stairs | 15,304 | 17.3 | 37.1 |
| Other (Mechanical space, utility tunnels, etc.) | 10,043 | 10.7 | 24.4 |
| TOTALS | 92,452 | 100.0 | 224.2 |

**EDUCATIONAL FACILITIES**

| | |
|---|---|
| Desks | in student rooms |
| Lounge-studies | 1 per wing, on ground floor |

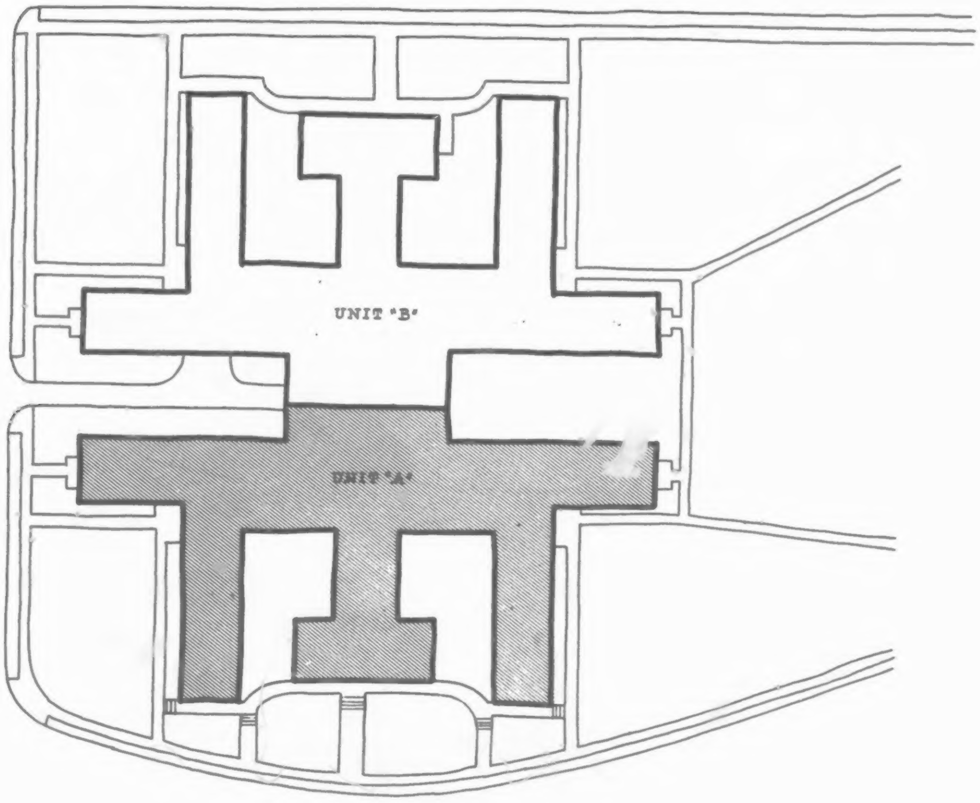
**OTHER COMMON FACILITIES**

| | |
|---|---|
| House lounges | see lounge-studies above |
| Main lounge | in commons |
| Recreation rooms | main dining room used for social activity |
| Ping-pong rooms | in basements, each wing |
| Television room | in commons, adjacent to main lounge |
| Food service | cafeteria in commons |
| Dining room | 1 for 400 in commons |
| Kitchen | in commons |

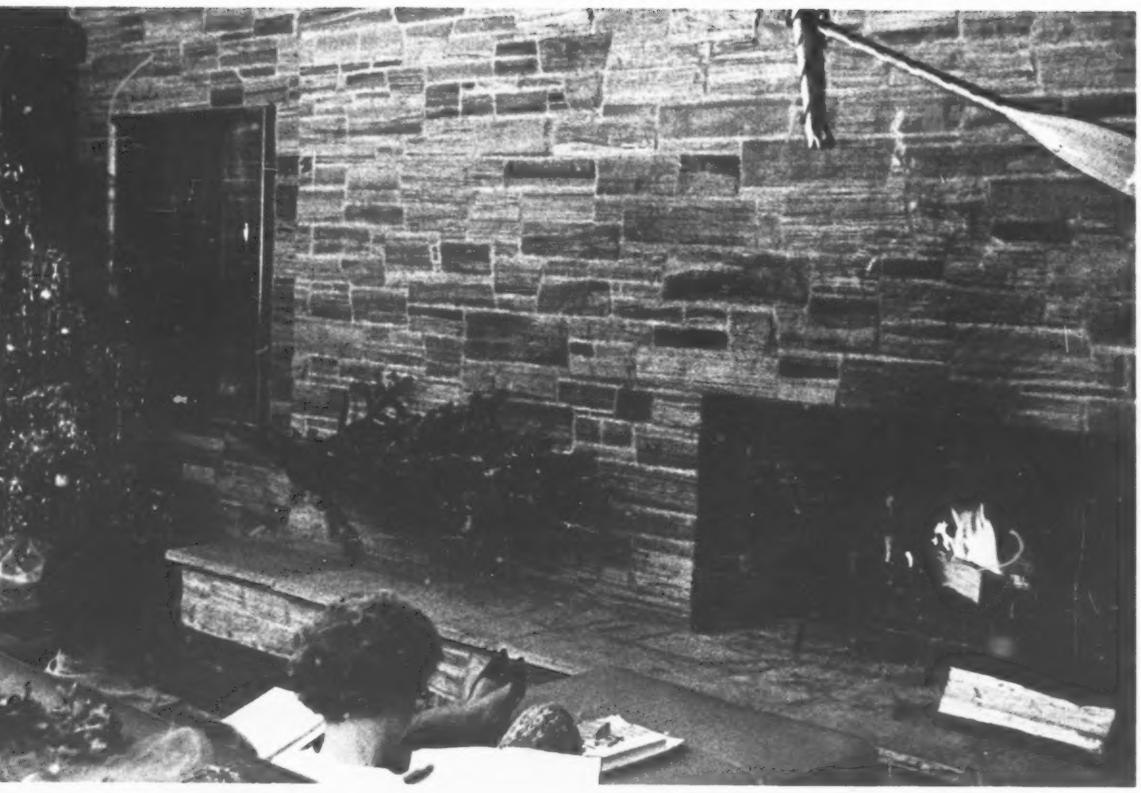
**SERVICE AND HOUSEKEEPING AREAS**

| | |
|---|---|
| Staff rooms | 1 per floor, each wing |
| Director's apartment | in commons |
| Offices | 2, in commons |
| Main desk | in commons |
| Mail | in commons |
| Communications | telephones in each student room |
| Housekeeping | in basement, each wing |
| Janitors' closets | 1 per floor, each wing |
| Student storage (bulk) | in basement, each wing |
| Laundries | in basement, each wing |
| Ironing | 1 alcove per floor, each wing |

# FLEXIBILITY AND ECONOMY KEYNOTE OREGON'S COED HOUSING



*Walton Hall, which was built in two stages as shown in the plot plan at right, consists of ten three- and four-story living units grouped around a one-story core that contains food service and other common facilities. Units are assigned to men or women students according to demand*



*A unit lounge (left and right) that focuses on a massive stone fireplace is the social center for each living unit or house. The lounges also join the residential sections of the houses to ten small dining rooms in the central core. Although each living unit has its own lounge and dining room, these spaces are shared with students—men and women—from the other houses. Because open space between the buildings was regarded as important for livability and outdoor recreation, the lounges and dining rooms all look out on landscaped terraces (far right)*

*Walton Hall*

University of Oregon

*Eugene, Oregon*

*Church, Newberry, Roehr and Schuette, Architects*

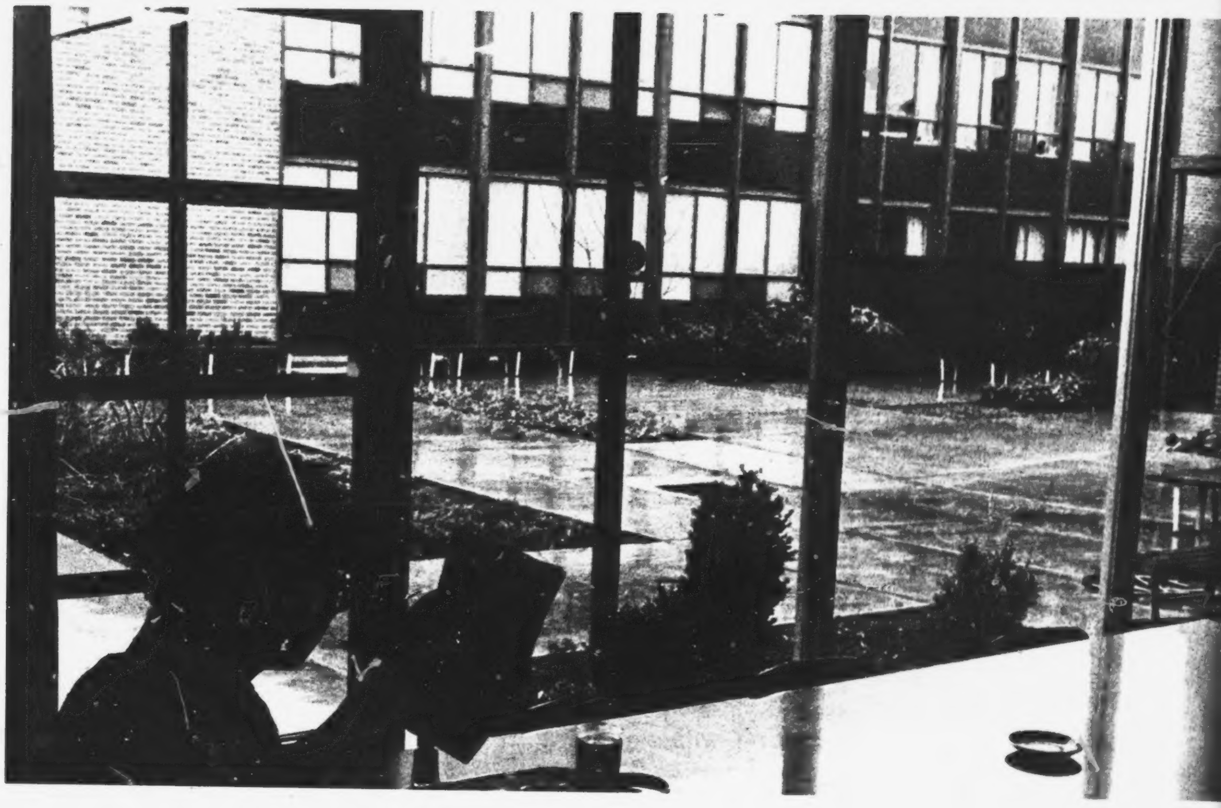
## Oregon's Coed Housing (*continued*)

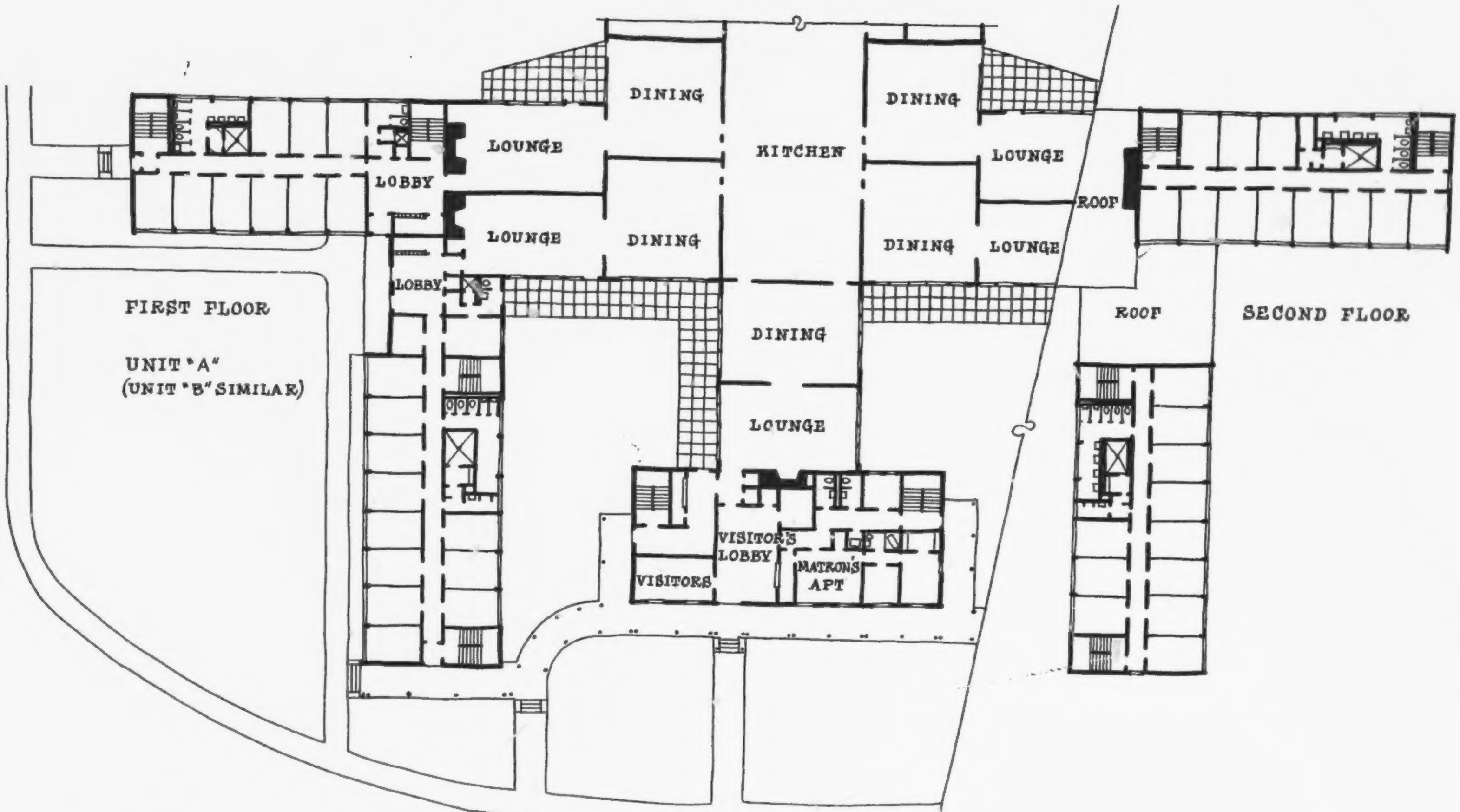
By grouping 10 small residential units around a single service building, the University of Oregon has been able to create intimate living groups without sacrificing the economy of large-scale food service and other centralized service facilities. The same device makes it possible to assign units to men or women, freshmen or upperclassmen, to keep pace with shifts in enrollment.

The 10 three- and four-story living units each house between 60 and 70 students, with 18 to 25 to a floor. Most of the rooms are double, served by a community bathroom on each floor. To strengthen unit identity, each wing is accented in a different color and linked to the central core by its own lounge and dining room.

In addition to the 10 small dining rooms, the one-story core contains the central kitchen. Recreation rooms, laundry rooms, storage rooms, linen supply rooms, and space for vending machines are located in the basement. The recreation rooms, like the unit lounges and dining rooms, are shared by men and women and may be used at any time during the day or evening.

Each living unit is supervised by a part-time counselor, a graduate or upper-class student, assisted by another part-time student counselor. Counseling activities are coordinated by a full-time assistant housing director. For women students and their counselors, there is also a matron with general supervisory duties.




DINING
DINING
LOUNGE
KITCHEN
LOUNGE
LOBBY
ROOF
LOUNGE
DINING
DINING
LOUNGE
LOBBY
FIRST FLOOR
UNIT "A"
(UNIT "B" SIMILAR)
DINING
ROOF
SECOND FLOOR
LOUNGE
VISITOR'S LOBBY
MATRON'S APT
VISITORS

(1)

## Oregon's Coed Housing *(continued)*

*The typical double student room is equipped with a sofa-bed that slides under a back rest during the day, and the usual study desk. As the photo shows, shelf space for books and gadgets is inadequate. Clothes storage, including drawer space, is taken care of by built-in wardrobes*

**PROJECT SIZE**

| | |
|---|---|
| Number of floors | 3 and 4 in residential wings, 1 in central unit |
| Number of students, including student staff | 650 men and women |
| Total area | 150,300 sq. ft. |
| Per student | 231 sq. ft. |

**SPACE ALLOCATION**

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 52,304 | 34.8 | 80.5 |
| Lounge-Recreation | 18,036 | 12.0 | 27.7 |
| Toilets-Showers | 11,723 | 7.8 | 18.0 |
| Kitchen-Dining | 17,435 | 11.6 | 26.8 |
| Service-Laundry and Storage | 18,337 | 12.2 | 28.2 |
| Corridors-Stairs | 31,563 | 21.0 | 48.6 |
| Other | 902 | .6 | 1.4 |
| TOTALS | 150,300 | 100.0 | 231.2 |

**PROJECT COSTS**

| | |
|---|---|
| Total, excluding land and furnishings | $2,306,116 |
| per student | 3,548 |
| per square foot | 15.34 |
| Furnishings, total (including built-in) | 306,298 |
| Per student | 471 |

**PLAN ORGANIZATION**—Ten wings containing student rooms radiate from a one-story central unit containing food service and other common facilities.

| | |
|---|---|
| House organization | 1 house per wing, 3 or 4 floors each |
| Students per house | 60 to 70 |
| Students per floor | 18 to 25 |
| Double room dimensions | 9 ft. 10 in. by 14 ft. 2 in. |
| Bathrooms, community | 1 per floor, each house or wing |

**EDUCATIONAL FACILITIES**

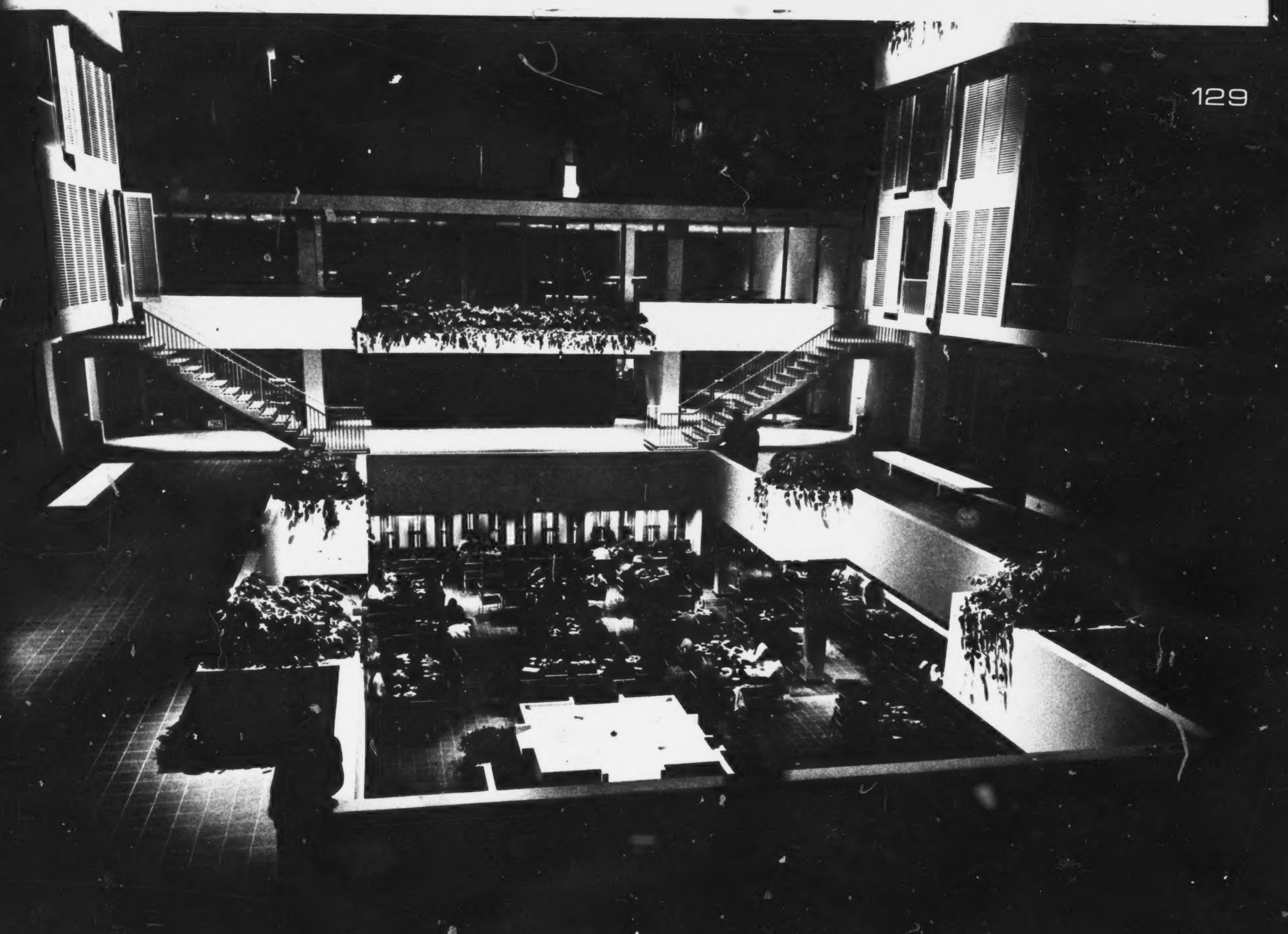
| | |
|---|---|
| Desks and bookshelves | in student rooms |
| Other | dining room and lounge occasionally used for study |

**OTHER COMMON FACILITIES**

| | |
|---|---|
| House lounges | 1 per house, on first floor |
| Lobby and visitors' lounges | on first floor central unit |
| Recreation rooms and game rooms | in basement, central unit |
| Food service | cafeteria in central unit |
| Dining rooms | 10 for 68 to 72 each (1 per house) |
| Kitchen | 1 in central unit, with dining rooms radiating from it |
| Vending machines | in basement, central unit |

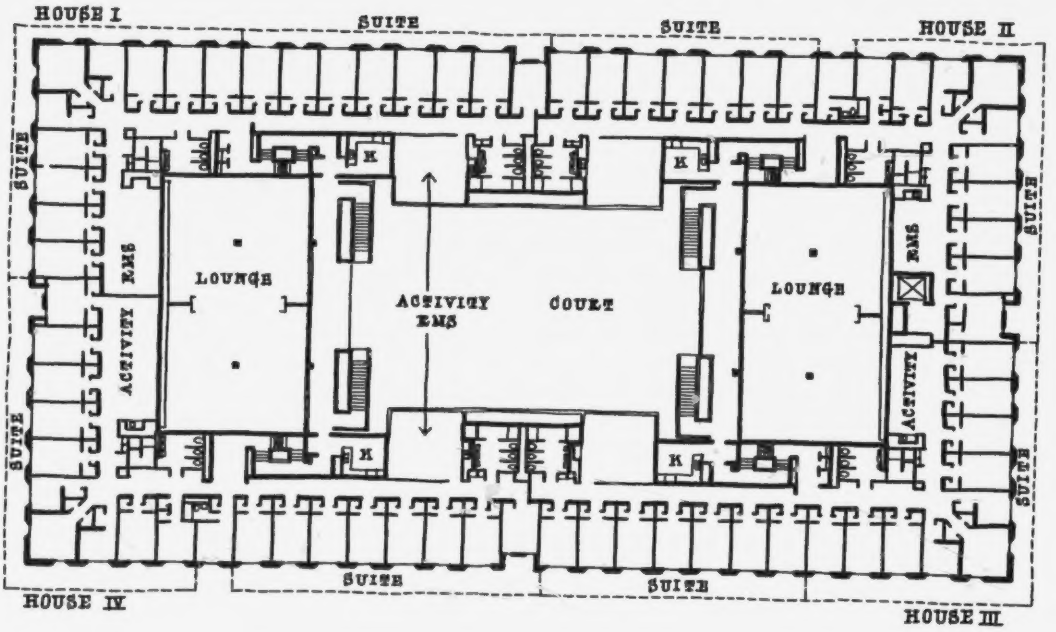
**SERVICE AND HOUSEKEEPING AREAS**

| | |
|---|---|
| Staff rooms | 2 rooms per house; matron's apartment in central unit |
| Main desk | in visitors' lobby, central unit |
| Mail | in lobby, central unit |
| Communications | telephones in house lounges |
| Housekeeping, linen and storage | in basement, central unit |
| Janitors' closets | 1 per floor, each wing |
| Student storage (bulk) | in basement |
| Laundry and ironing rooms | in basement |



# PENNSYLVANIA'S FIVE-STORY PATIO

*The private living areas of this women's residence at the University of Pennsylvania encircle a glass-enclosed, greenery-bedecked patio (above) that serves as a commons. As shown in the third-floor plan at right, each quadrant of the building forms a vertical house, each floor of which is further divided into two 16- to 24-student suites. The group spaces in the houses all look inward to the court: the third-floor lounges and second-floor recreation rooms through glass walls, activity rooms through shuttered windows*


HOUSE I
SUITE
SUITE
HOUSE II
SUITE
SUITE
RMS
LOUNGE
ACTIVITY
K
K
ACTIVITY RMS
COURT
K
K
LOUNGE
RMS
ACTIVITY
SUITE
SUITE
SUITE
SUITE
HOUSE IV
HOUSE III

*Women's Residence Hall*

**University of Pennsylvania**

*Philadelphia, Pennsylvania*

*Eero Saarinen and Associates, Architects*

## Pennsylvania's Five-Story Patio *(continued)*

Turning its back on its urban surroundings, this hall opens itself to a light-flooded, landscaped court that serves as the hub of community life for 664 coeds. Ringed by student living areas, the court shares some of the qualities of the traditional quadrangle, but its central fountain, open dining terrace, shuttered balconies, and plentiful planting tinge it with a flavor more traditional in the Mediterranean than in Philadelphia. Romantic, yes, but practical too: since it is enclosed, the five-story living room is usable throughout the year.

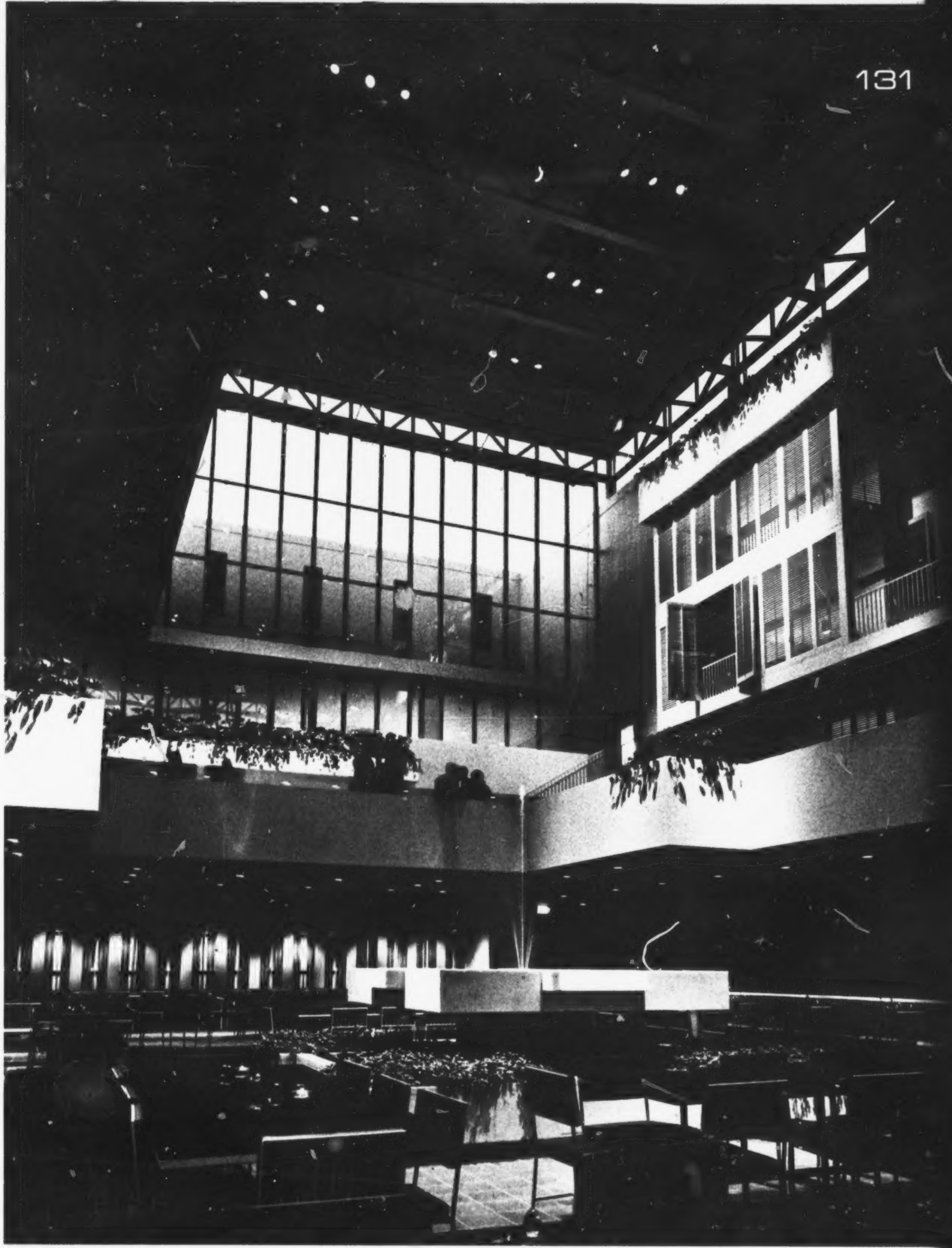
The main entrance to the building is on the second floor, where a mezzanine that serves as a lobby projects deeply into the court. On the same level are the administrative offices, mail room, linen room, and four informal recreation rooms. Below the mezzanine floor, at ground level, are the dining room, with tables grouped around a decorative fountain, and the kitchen, grille, and snack bar. At each end of the court, open stairs lead from the main lobby to two formal lounges on the third level.

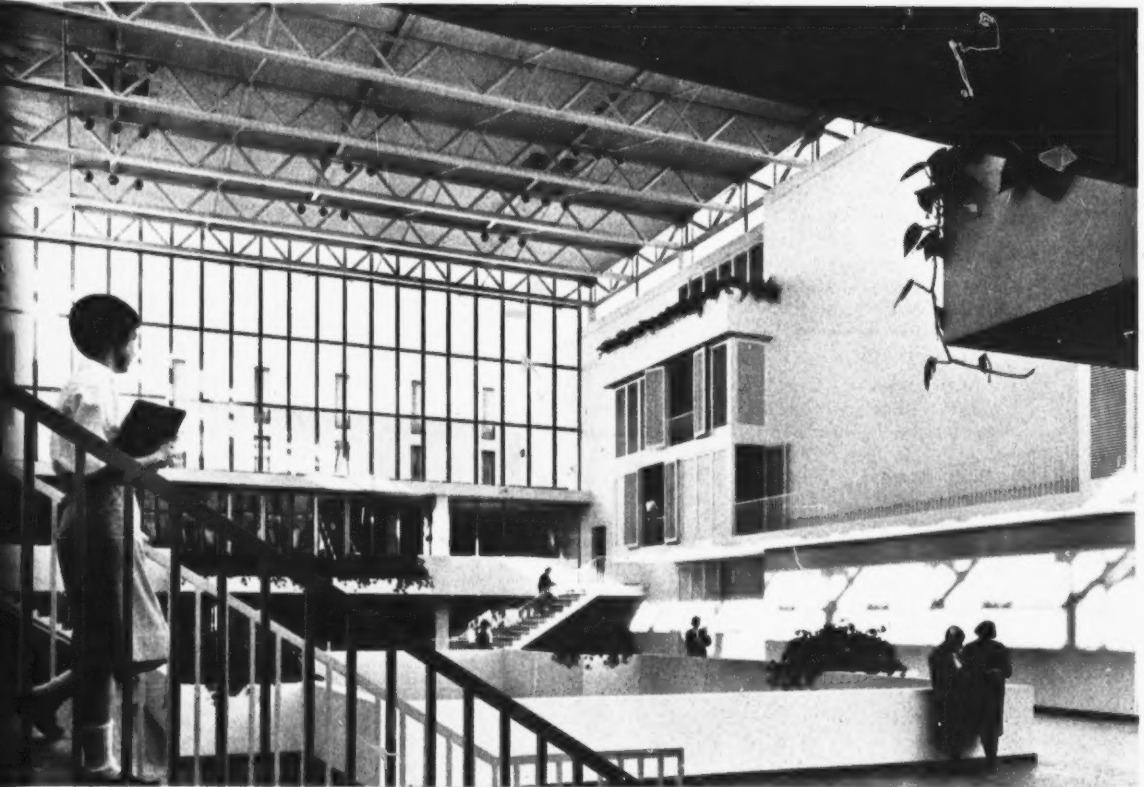
Student rooms around the court are organized in four houses fully separated from one another by corridor partitions that divide the building into quadrants. Swinging doors across the corridors divide each house floor further into two suites for 16 to 24 students. Each suite has its own activity room with kitchenette overlooking the court, and a community bathroom. A laundry room with automatic equipment, an ironing room, and a serving kitchen adjoining the formal lounge are provided for each house.

All of these common spaces are placed on the inner periphery of the building so that they act as a buffer zone to separate student rooms from the public areas and protect them against noise traveling across the court. The student rooms are ranged about the perimeter of the building, where windows of three different shapes give variety to the room interiors and relieve the monotony of an otherwise forbidding exterior.

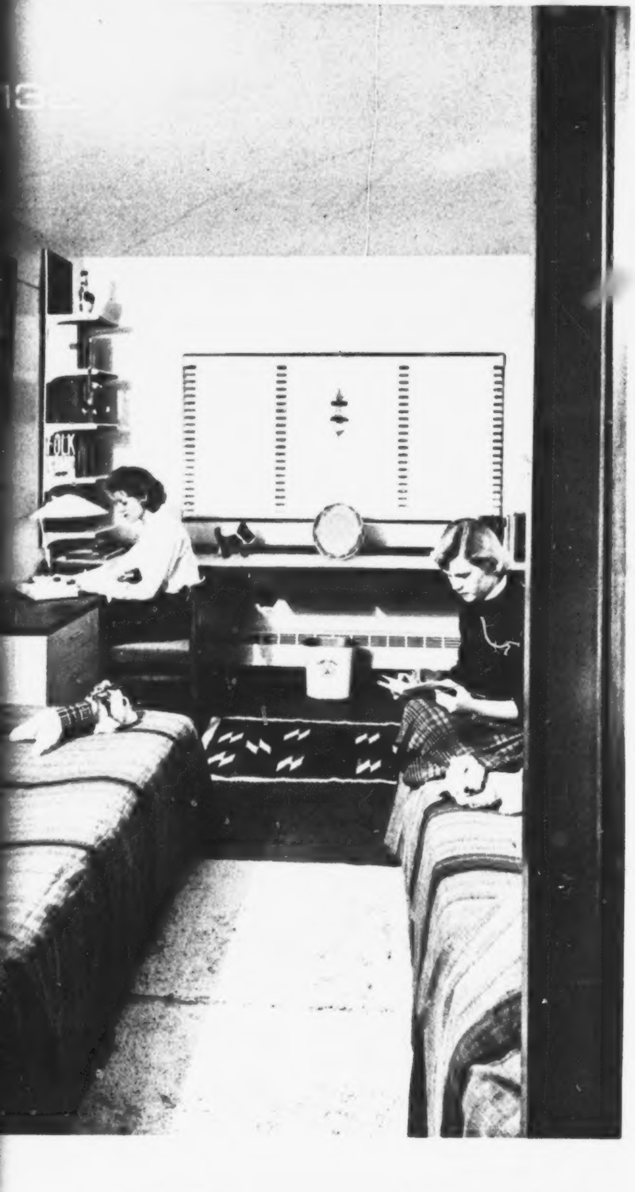
Two academically trained co-directors whose duties include administration and counseling occupy apartments in the hall. Their aides are eight graduate assistants, two per house, who are assigned to single rooms with private bath.

*The suite activity rooms (left) are furnished to serve as informal sitting rooms for the girls who live nearby, so that socializing can be diverted from the student rooms. They are also convenient meeting spaces for small groups. A kitchenette provides for the ubiquitous coffee break, while the acoustic-tiled ceiling and resilient-tiled floor help to stop noise where it starts, keeping it out of student rooms*





*The entrance floor mezzanine, the building's lobby and principal circulation area, overlooks a 350-seat dining terrace focused on a decorative fountain. Although the court is enclosed for year-round use, it is decorated to emphasize a sense of openness. Walls are white – or glass, floors are an earthy terra cotta, planting is plentiful, sunlight pours in by day. At night, however, the enclosure is invoked to create, with the help of well placed spot-lighting, a more intimate, sheltered space*



*Student rooms provide a quiet utilitarian background—white walls, charcoal gray floors, and walnut furniture—that gives students ample scope for expressing their own decorating notions through their personal furnishings. The large closets that flank the entrance help block corridor noise*

## Pennsylvania's Five-Story Patio *(continued)*

**PROJECT SIZE**

| | |
|---|---|
| Number of floors | 5 above grade |
| Number of students, including student staff | 664 women |
| Total area | 170,000 sq. ft. |
| Per student | 256 sq. ft. |

**SPACE ALLOCATION**

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 69,720 | 41.0 | 105.0 |
| Lounge-Recreation | 23,981 | 14.1 | 36.1 |
| Toilets-Showers | 9,966 | 5.9 | 15.0 |
| Kitchen-Dining | 13,261 | 7.8 | 19.9 |
| Service-Laundry | 11,187 | 6.6 | 16.8 |
| Storage | 4,156 | 2.5 | 6.3 |
| Corridors-Stairs | 27,816 | 16.4 | 41.9 |
| Court | 2,981 | 1.7 | 4.5 |
| Other (Apartments, snack bar, store, administration) | 6,932 | 4.0 | 10.5 |
| TOTALS | 170,000 | 100.0 | 256.0 |

**PROJECT COSTS**

| | |
|---|---|
| Total, excluding land and furnishings | $3,650,000 |
| Per student | 5,497 |
| Per square foot | 21.47 |
| Furnishings, total | 350,000 |
| Per student | 527 |

**PLAN ORGANIZATION**—Student rooms and other living areas built around a roofed, glass-walled central court.

| | |
|---|---|
| House organization | hall divided vertically into 4 houses; each house subdivided into 2 suites per floor (9 or 10 per house) |
| Students per house | 160 to 180 |
| Students per suite | 16 to 24 (typical) |
| Single rooms | varies, 0 to 3 |
| Double rooms | varies, 7 or 8 |
| Double room dimensions | 9 ft. 8 in. by 17 ft. 6 in. |
| Bathrooms, community | 1 per suite |

**EDUCATIONAL FACILITIES**

| | |
|---|---|
| Desks and bookshelves | in student rooms |

**OTHER COMMON FACILITIES**

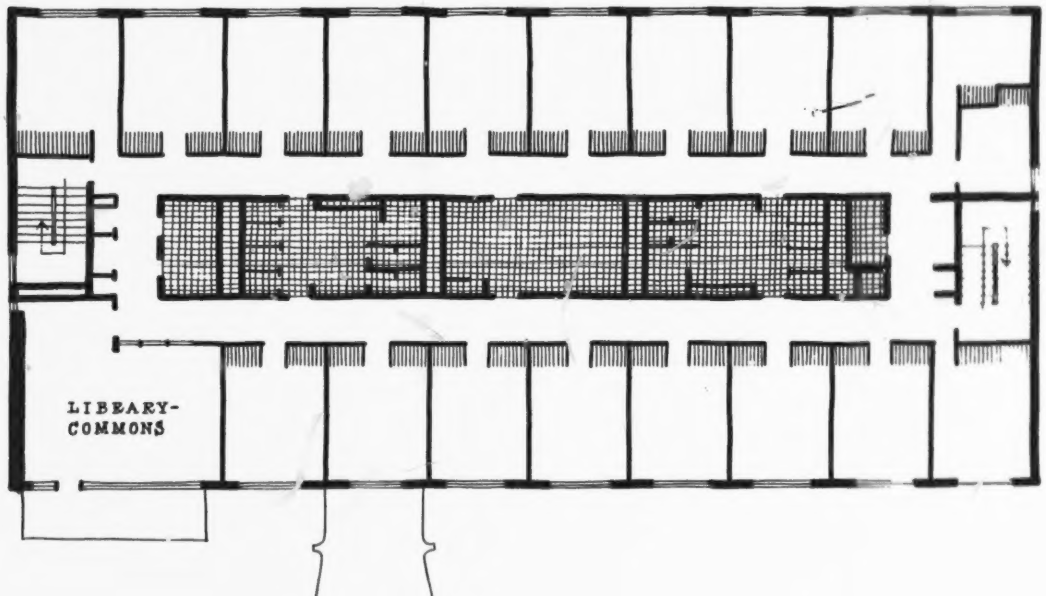
| | |
|---|---|
| Activity rooms | 1 per suite |
| Kitchenettes | 1 per suite, in activity room |
| Serving Kitchen | 1 per house, adjoining formal lounges |
| Main lobby | on second (entrance) floor |
| Formal lounges | 2, divisible to provide 1 per house, on third floor overlooking court |
| Recreation rooms | 1 per house, on second floor |
| Food service | cafeteria, first floor |
| Dining room | in court on first floor |
| Kitchen | on first floor |
| Snack bar | on first floor |
| Grille | on first floor |
| Student store | on first floor |

**SERVICE AND HOUSEKEEPING AREAS**

| | |
|---|---|
| Staff rooms | on each floor |
| Staff offices | on first and second floors |
| Health service | nurses' quarters, first floor |
| Mail | on second floor, off court |
| Communications | telephones each floor, each house |
| Housekeeping, linen | on first and second floors |
| Laundry and ironing rooms | 1 per suite |

# STEPHEN'S INSIDE STORY

*Stephens College fits its highly unconventional House Plan into an essentially conventional building that boasts no special facilities except for faculty offices and a small conference room on the ground floor. (The third-floor plan at right shows the typical arrangement of double rooms around a utility island, with a common room at one end of each floor.) The unique program is accommodated primarily by making the common rooms and the large ground floor recreation room do multiple duty—as library, meeting and seminar spaces, and even classrooms*



*West Hall*

STEPHENS COLLEGE

*Columbia, Missouri*

*Murphy & Mackey, Architects*

## Stephens' Inside Story *(continued)*

AS A BUILDING, West Hall is first cousin to any number of women's residence halls. Its importance derives not from numbers and kinds of spaces but from what goes on within them. For West is the first home of the Stephens House Plan, a unique teaching experiment that its faculty coordinator calls "the modern equivalent of Mark Hopkins' log."

Certainly the House Plan shrinks the length of the log—the distance between teacher and pupil. The 100 freshman girls (called juniors) who live in the house all take the same basic core curriculum consisting of five courses that are taught in the hall by five instructors whose offices are located there. Each of the instructors is an adviser to 20 girls, and one of the instructors, who occupies an apartment in the hall, also serves as Hall Counselor, assisted by 10 sophomores (senior sisters). Because of the low teacher-student ratio, and because the instructors are within easy reach, the traditional gap between faculty and students is narrowed so that the instructors can give individual students intellectual guidance that ranges beyond the confines of classroom subjects.

The House Plan also has a decided impact on the formal educational process. Since the five instructors all teach the same 100 students, they have been able to develop a team teaching approach that assures consistent handling of overlapping subject matter. And since the length and time of class periods can be changed without upsetting the entire college schedule, the teachers are no longer tied to the 50-minute lecture twice or three times a week. Classes may meet only once a week or once every two weeks so that much teaching can be done on a tutorial basis and students are free to do more independent work. This flexibility also encourages experiments with teaching aids—closed-circuit television, radio, amplified telephone interviews, and recordings—that give the instructors more time for planning and for working with individual students.

To avert the danger of the students' becoming house-bound and to introduce them to other faculty members and students, each girl is expected to take five hours of electives outside the house and to participate in the college's general extra-class programs. Within the house, the emphasis on independent study is counterbalanced by common outside-reading assignments and field trips.

An intensive in-housing educational program like the House Plan might be expected to demand extensive in-housing educational facilities. It did not. With the exception of the faculty offices and a small conference room on the ground floor, West Hall contains no spaces labeled "for teaching only." Classes meet in the first floor recreation room and in the common rooms on the upper three floors. The second floor commons, which is also the main lounge, is decorated with good original paintings and sculpture and frequently changed exhibits. The third floor commons, which is also the house library, is stocked with books and magazines that are related to basic courses. All of these rooms, plus the faculty offices, are used by the instructors for work with small groups and individuals, as well as for class meetings.

*Students enter West Hall via a canopied entrance porch on the second level. A small foyer replaces the usual formal lobby, whose entertainment functions are assumed by a commons slightly larger than those on the two upper floors of the 4-story building*

*The heart of Stephens' House Plan is the close interrelation between students and faculty, and the integration of the students' in-class and out-of-class experiences. Above left: The accessibility of House Plan teachers encourages frequent conferences at which students can discuss classwork, special projects, and "things in general." Above right: The second floor commons here becomes the setting for an enthusiastic musical discussion with a guest violinist prior to his evening recital. Right: The faculty also benefits from the House Plan, which makes it possible for them to develop a coordinated team teaching approach. Here, in the recreation room that so often serves as their classroom, they discuss their work with a visitor*

*The House Plan's emphasis on individual work, and its lack of emphasis on formal teaching facilities, make spontaneous discussions in students' rooms a natural part of learning*

## Stephens' Inside Story *(continued)*

**PROJECT SIZE**

| | |
|---|---|
| Number of floors | 4 |
| Number of students, including student staff | 110 women |
| Total area | 28,680 sq. ft. |
| Per student | 261 sq. ft. |

**SPACE ALLOCATION**

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 15,690 | 54.7 | 142.6 |
| Lounge-Recreation | 1,350 | 4.7 | 12.3 |
| Toilets-Showers | 1,310 | 4.6 | 11.9 |
| Kitchen Dining | — | — | — |
| Service-Laundry (including mechanical) | 2,780 | 9.7 | 25.3 |
| Storage | 540 | 1.9 | 4.9 |
| Corridors Stairs | 5,890 | 20.5 | 53.5 |
| Other (Administration including faculty offices, counselor's quarters, and office) | 1,120 | 3.9 | 10.1 |
| TOTALS | 28,680 | 100.0 | 260.6 |

**PROJECT COSTS**

| | |
|---|---|
| Total, excluding land and furnishings | $511,448 |
| Per student | 4,650 |
| Per square foot | 17.80 |
| Furnishings, total | 48,700 |
| Per student | 443 |

**PLAN ORGANIZATION**—Student rooms and common facilities are grouped around a central utility core.

| | |
|---|---|
| Students per floor: | |
| third and fourth floors | 36 each |
| second floor | 26 |
| first floor | 12 |
| Student rooms | double, except second, third and fourth floors have 2 singles each for student advisors |
| Double room dimensions | 11 ft. 6 in. by 17 ft. |
| Bathrooms, community | 2 on third and fourth floors;<br>1 on first and second |

**EDUCATIONAL FACILITIES**

| | |
|---|---|
| Desks and bookshelves | in student rooms |
| Faculty offices, conference room | on ground (first) floor |
| Common rooms | 1 on each of 3 upper floors, used for formal and informal instruction |
| Library | in common room, third floor |
| Recreation room | on ground floor, used for classes |
| Exhibits, displays | in common room, second floor |

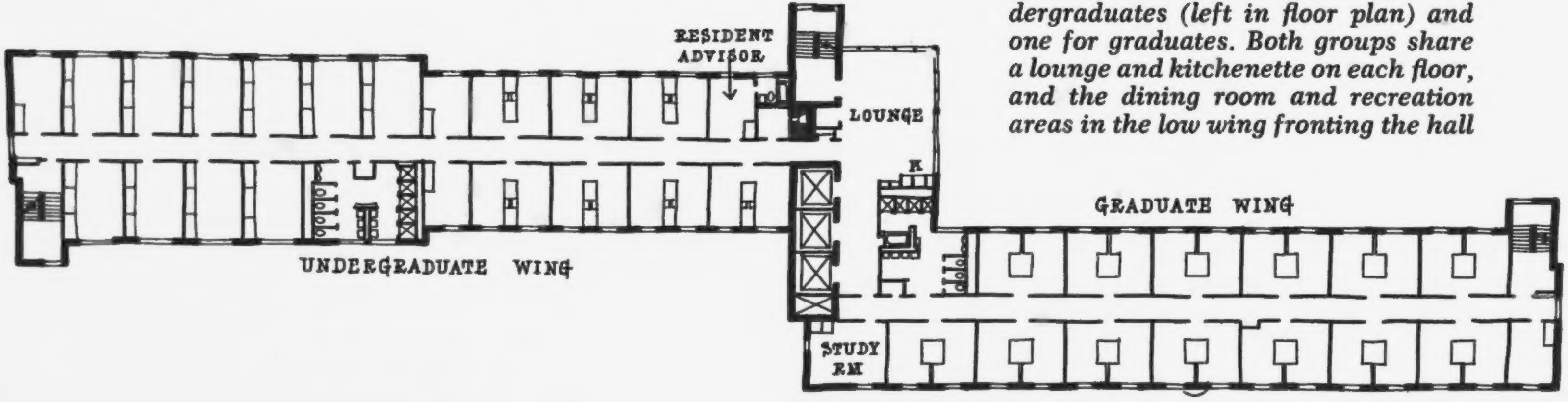
**OTHER COMMON FACILITIES**

See common rooms and recreation room above

**SERVICE AND HOUSEKEEPING FACILITIES**

| | |
|---|---|
| Staff rooms | hall counselor's apartment on second floor; student staff rooms each floor |
| Main desk and office | on second floor |
| Communications | telephones in floor corridors |
| Housekeeping and janitor's closets | in utility core, each floor |
| Student storage (bulk) | in utility core, each floor |
| Laundry and ironing rooms | in utility core, each floor |

# SYRACUSE GRADS AND UNDERGRADS SHARE COMMON GROUND


RESIDENT ADVISOR
LOUNGE
K
GRADUATE WING
UNDERGRADUATE WING
STUDY RM

*Sadler Hall's corridor offset splits the building into two wings, one for undergraduates (left in floor plan) and one for graduates. Both groups share a lounge and kitchenette on each floor, and the dining room and recreation areas in the low wing fronting the hall*

*Sadler Hall*

**Syracuse University**

*Syracuse, New York*

*King & King, Architects*

## Syracuse Grads and Undergrads *(continued)*

SADLER HALL'S TWO-PART arrangement encourages graduates and undergraduates to mingle in common-use areas without forcing them to live in one another's pockets. Thus the graduate student's too-frequent tendency to isolate himself from the rest of the student community was forestalled at the same time that he was given living quarters to satisfy his special needs, especially for more study space.

An offset divides the eight-story hall into two wings so that each floor consists of two distinct sections: an undergraduate house for 37 students, and a smaller wing for 27 graduates. Each section has a community bath, and the graduate wing has a small study room as well. The two wings join at the elevator lobby, off which is a lounge and kitchenette used by both student groups on the floor.

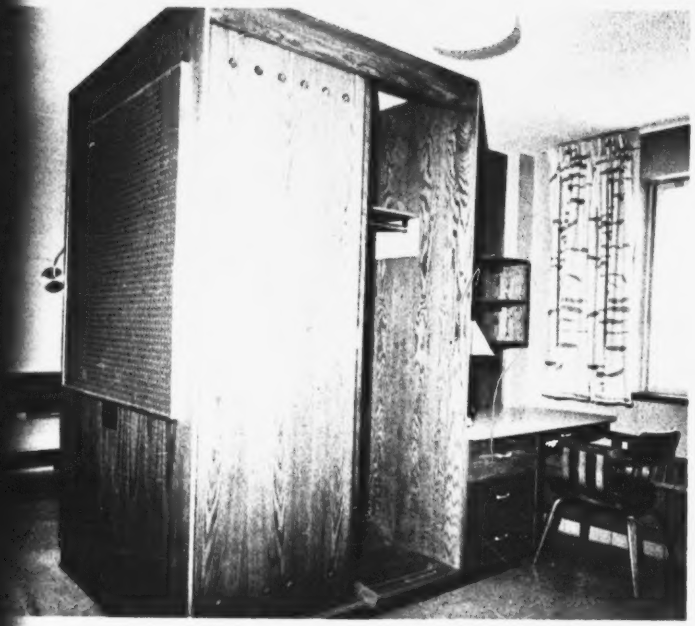
Other spaces in the building are also used jointly. On the first floor are the main lobby, a separate reading room stocked with general and reference books bought out of the hall's operating budget, and a lounge-social room with an adjoining snack bar served by a dumb-waiter from the kitchen below. The undergraduate wing at this level is occupied by student rooms, but the graduate wing contains guest rooms with private baths, and the hall director's apartment and office. In addition to the kitchen, the ground floor includes the dining room, hobby room, laundry and drying room, linen room, and other service spaces.

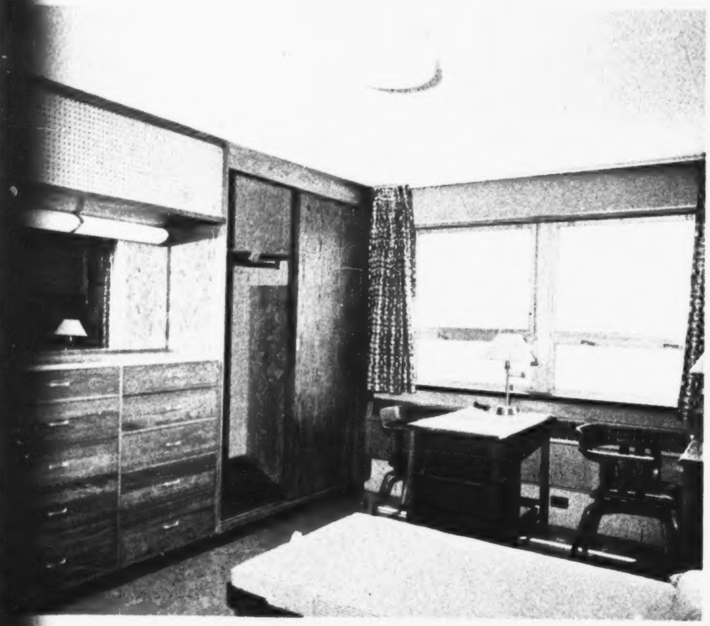
Among the most important joint activities held in the lounge and reading room are a series of cultural programs designed to broaden the students' knowledge of fields not specifically covered in formal classwork. These programs are planned by the hall's staff but organized through its student council, which gives the financial support of a special student fee as well as the moral support of student participation. Typical programs include music sessions followed by informal, faculty-led discussions, vocational information programs intended to help in job-placement, and visual displays on subjects ranging from contemporary art to the latest developments in radar. For these last, heavy use is made of display cases in the lobby.

Sadler Hall's staff is led by a full-time Hall Director, an advanced graduate student who coordinates the University's personnel program for upperclassmen, in addition to administering the hall, planning educational programs, and coordinating the work of the eight Resident Advisors. These house advisors are also graduate students who are assigned single rooms in the undergraduate wing.

*The first floor library provides both graduates and undergraduates with a peaceful retreat for reading, study, and quiet relaxation. Books, which include leisure-time reading as well as basic references, are purchased out of the hall's general operating budget*

*Above: The principal meeting ground for Sadler Hall's students is the lounge-social room on the first floor. The single large space, which replaces the separated lounge and recreation rooms so often found in residence halls, is divided by furniture groupings into areas for various kinds of activities—e.g., television viewing and games. Like the library, it is also used frequently for informal cultural and educational programs. The adjoining snack bar is equipped for fountain service and "short orders," with more substantial food supplied by dumbwaiter from the main kitchen on the floor below. Right: The informal floor lounges are popular gathering points for students who live nearby. Among the drawing cards—readily available company, coffee, and telephones*





*In all the graduate rooms, and about half the double rooms in the undergraduate wing, the longer dimension of the room parallels the exterior wall so that a floor-to-ceiling room divider can be used to create two semi-private rooms (top). The divider, which makes possible privacy as well as companionship, contains a wardrobe and desk —or wardrobe and chest of drawers— on each side. Other built-ins (chests or desks as the case may be) and beds are placed on the room walls opposite the divider. In the other type of undergraduate double room (above) built-in closets and chests line only one wall*

## Syracuse Grads and Undergrads *(continued)*

### PROJECT SIZE

| | |
|---|---|
| Number of floors | 8 |
| Number of students, including student staff | 493 men |
| Total area | 134,839 sq. ft. |
| Per student | 273 sq. ft. |

### SPACE ALLOCATION

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 64,248 | 47.6 | 130.3 |
| Lounge-Recreation | 10,065 | 7.5 | 20.4 |
| Toilets-Showers | 7,489 | 5.5 | 15.2 |
| Kitchen-Dining | 11,852 | 8.8 | 24.0 |
| Service-Laundry | 7,225 | 5.4 | 14.7 |
| Storage | 1,639 | 1.2 | 3.3 |
| Corridors-Stairs | 27,777 | 20.6 | 56.3 |
| Other | 4,544 | 3.4 | 9.2 |
| TOTALS | 134,839 | 100.0 | 273.4 |

### PROJECT COSTS

| | |
|---|---|
| Total, excluding land and furnishings | $3,119,459 |
| Per student | 6,327 |
| Per square foot | 23.13 |
| Furnishings, total | 176,557 |
| Per student | 358 |

**PLAN ORGANIZATION**—Building divided vertically into two wings, one for graduates and one for undergraduates, with common facilities in building core and on lower floors.

| | |
|---|---|
| House organization | 8 undergraduate houses, 1 per floor |
| Undergraduates per house | 37 |
| Single rooms | 3 |
| Double rooms | 17 |
| Graduates per floor | 28, including house advisor |
| Single rooms | 2 |
| Double rooms | 13 |
| Double room dimensions: | |
| Undergraduate | 12 ft. by 16 ft. 1½ in. and 13 ft. 1½ in. by 16 ft. 4 in. |
| Graduate | 13 ft. 1½ in. by 18 ft. 5 in. |
| Bathrooms, community | 2 per floor; 1 for graduates, 1 for undergraduates |

### EDUCATIONAL FACILITIES

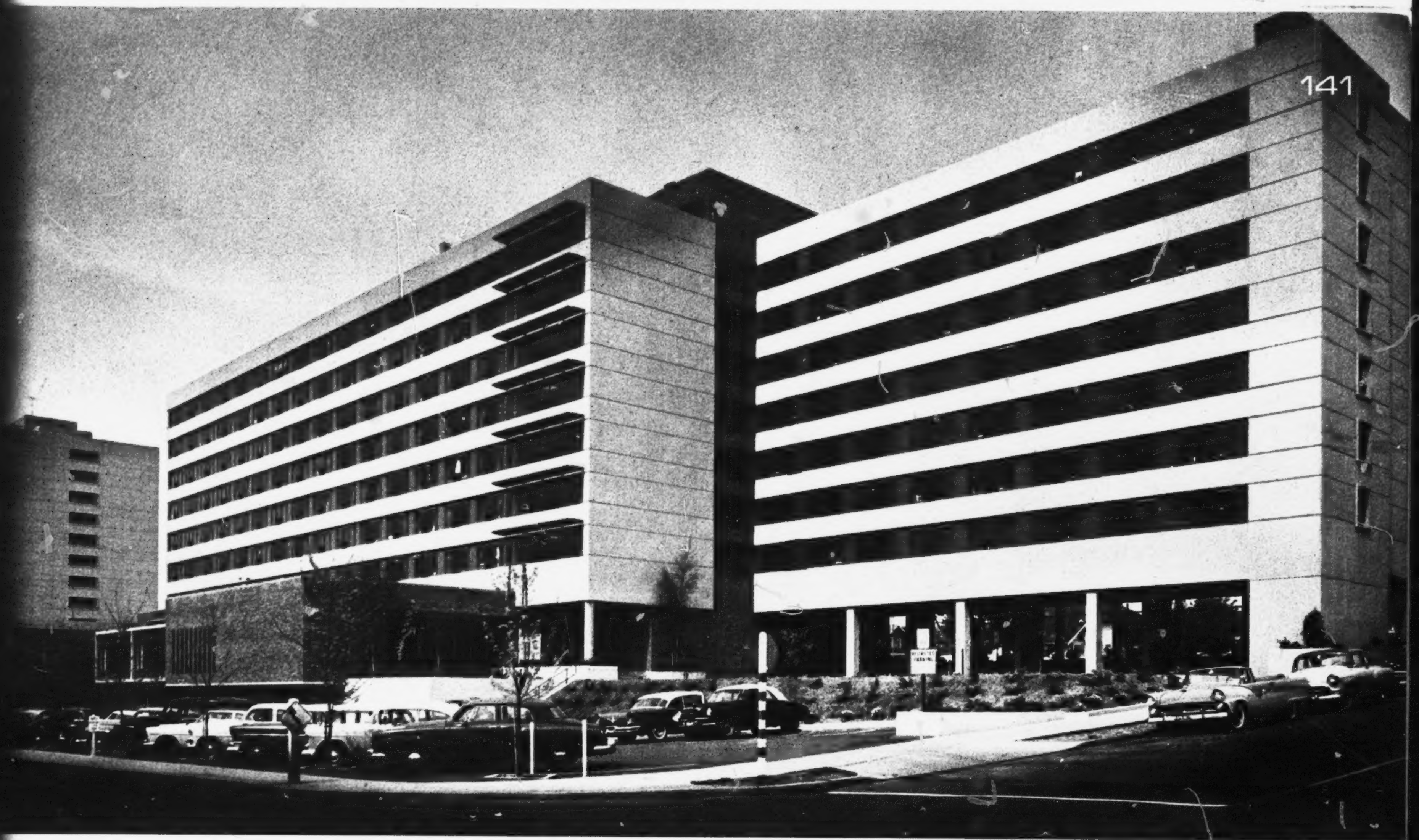
| | |
|---|---|
| Desks and bookshelves | in student rooms |
| Study rooms | 1 per floor, for graduates |
| Reading room | on first floor |
| Displays and exhibits | in first floor lobby |

### OTHER COMMON FACILITIES

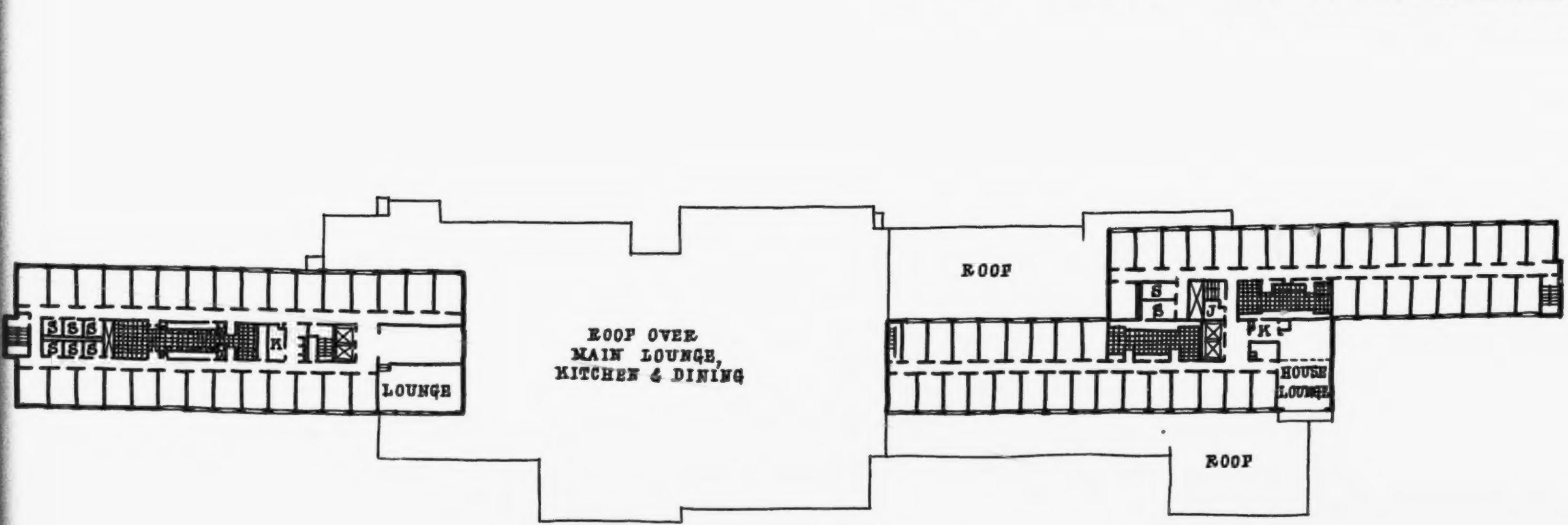
| | |
|---|---|
| House lounges | 1 per floor, used by graduates and undergraduates |
| Kitchenettes | in house lounges |
| Main lobby | on first floor |
| Main lounge-recreation room | on first floor, adjoining lobby |
| Ping-pong room | on ground floor |
| Hobby area | on ground floor |
| Food service | cafeteria |
| Dining room | 1 for 372, subdivisible |
| Kitchen | ground floor |
| Snack bar | off main lounge |
| Guest rooms | 7, first floor of graduate wing |

### SERVICE AND HOUSEKEEPING AREAS

| | |
|---|---|
| Staff rooms | 1 per floor; hall director's apartment on first floor |
| Main desk and office | on first floor |
| Mail | on first floor |
| Communications | telephones in floor lounges and main lobby; buzzers to student rooms |
| Housekeeping, office and storage | on ground floor |
| Housekeeping closets | each floor |
| Maintenance shop | on ground floor |
| Laundry and ironing rooms | on ground floor |



# WASHINGTON BUILDS ON EXPERIENCE


S S S
S S S
K
LOUNGE
ROOF OVER
MAIN LOUNGE,
KITCHEN & DINING
ROOF
S
S
J
K
HOUSE
LOUNGE
ROOF

*Lander Hall (right in photo and plan) is the second of two similar high-rise halls connected by a two-story food service unit. (The other two-story elements also contain common spaces.) Its vertical offset and ground level recreation court are outward manifestations of design changes made as a result of experience in operating Terry Hall (left), which was built some four years earlier. The street level parking supplements an underground garage*

*Terry and Lander Halls*

UNIVERSITY OF WASHINGTON

*Seattle, Washington*

*Young, Richardson & Carleton,*
*Architects*

## Washington Builds on Experience *(continued)*

SINCE THESE NEIGHBORING halls were built about four years apart, the lessons learned in living with the first could be translated into improvements in the second—primarily by substituting small-scale common rooms for large spaces the students ignore.

Terry Hall, the earlier of the pair, is organized in five houses of two floors each. The 29 double rooms on each floor are lined up on both sides of a central service core that contains a community bathroom, study-typing rooms, an ironing room with adjoining kitchenette, and the elevators and stairs. At the end of the core in each house is the seldom-used house lounge, a large two-story high space overlooked by a sizable balcony.

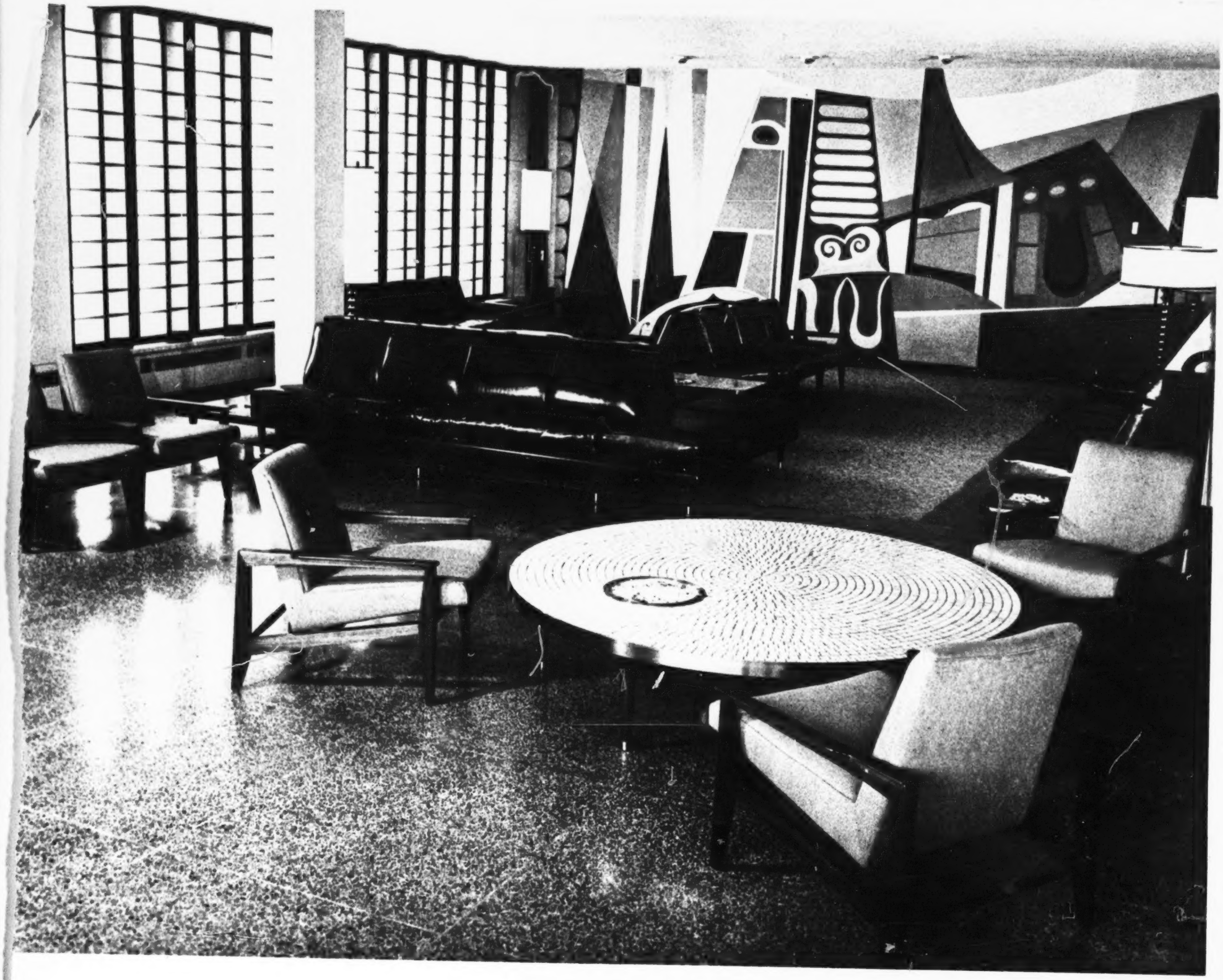
In contrast, Lander Hall is divided by floors into seven houses, which a corridor offset further divides into two sections of about the same size. The common-use facilities clustered around this offset are similar to those in Terry Hall, except that the house lounges were reduced in size and equipped with movable partitions so that each can be split into two still smaller spaces which are frequently used for study as well as socializing.

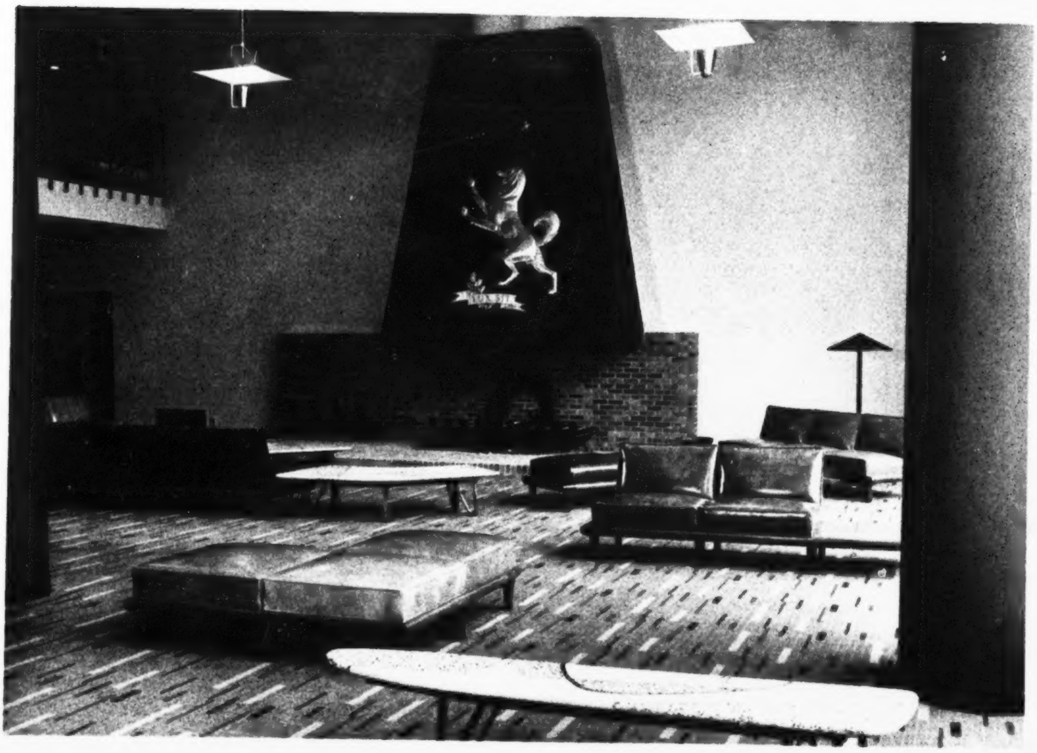
Lander Hall's main lounge is also smaller and more informal than its balconied counterpart in the older hall, as is its ground floor recreation room. Other common facilities—laundry room, music and hobby rooms, storage rooms, and so forth—are similar in both buildings, but the small-space theme is picked up again in the dining areas, which are served from a central kitchen in the two-story unit that links the two buildings. Students who live in Terry Hall eat in one of two dining rooms seating 450 or 115, or, rarely, in a tiny private dining room that seats up to 12 for special meetings. But when Lander was built, these were replaced by seven, 78-seat dining rooms—one to a house—that tend to eliminate the more unpleasant aspects of mass feeding and provide a natural meeting place.

Only one type of common space was increased in the newer hall. Because the cramped urban site left the halls pinched for space for active recreation, Lander's ping-pong room is larger than the one in Terry, and the first level of the hall is left open at one end to form a sheltered basketball practice court.

Both halls are administered by a full-time Residence Manager, whose assistant acts as program advisor and coordinator for the work of the house advisors and house managers. The house advisors are graduate students who make room assignments, inspect rooms during check-out periods, assist with counseling, and work with the elected house officers in planning special programs. The house managers are undergraduates whose duties are primarily custodial.

*The principal difference between Lander Hall and Terry Hall is the substitution in Lander of small common spaces for large. For example, Lander has a small dining room (below) for each of its seven houses, instead of the huge 450- and 115-seat dining halls provided for Terry's residents*





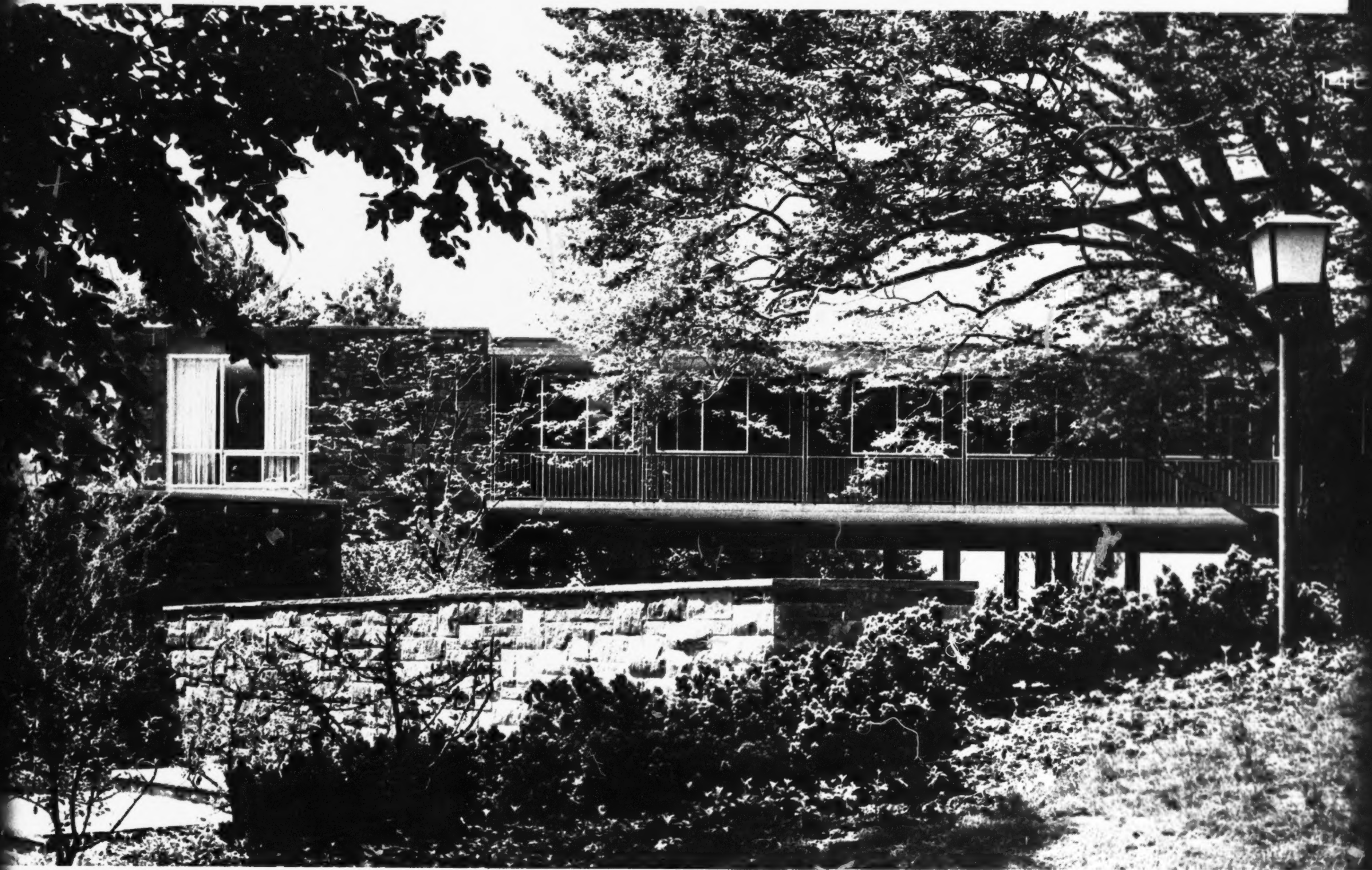
*The main lounge in Terry Hall (right) is a large, formal two-story room with a sizable balcony. In spite of such attractions as the fireplace, it is rarely used by students, except for occasional formal entertaining. Lander Hall's planners took the obvious lesson to heart. The main lounge there is a more intimate space (above) that is always inhabited by a vivid mural, and usually inhabited by students*

## Washington Builds on Experience *(continued)*

| | TERRY HALL, 1953 | LANDER HALL, 1957 |
|---|---|---|
| **PROJECT SIZE** | | |
| Number of floors | 11 | 8 |
| Number of students, including student staff | 593 men | 679 men |
| Total area | 204,682 sq. ft. | 172,004 sq. ft. |
| Per student | 345 sq. ft. | 253 sq. ft. |
| **PROJECT COSTS** | | |
| Total, excluding land and furnishings | $2,548,995 | $2,354,500 |
| Per student | 4,298 | 3,468 |
| Per square foot | 12.45 | 13.69 |
| Furnishings, total | 260,554 | 345,500 |
| Per student | 439 | 509 |
| **PLAN ORGANIZATION**—Adjacent high-rise buildings share food services in low connecting link built with Terry Hall. | | |
| House organization | 5 houses, 2 floors each | 7 houses, 1 floor each |
| Students per house | 116 | 98 |
| Students per floor | 58 | 98 |
| Double rooms | 29 | 48 |
| Single rooms | none | 2 |
| Double room dimensions | 11 ft. 6 in. by 15 ft. 6 in. | 11 ft. by 15 ft. |
| Bathrooms, community | 1 per floor | 2 per floor |
| **EDUCATIONAL FACILITIES** | | |
| Desks and bookshelves | in student rooms | in student rooms |
| Study-typing rooms | 5 small per floor | 2 large per floor |
| Other | none | see house lounges |
| Music practice rooms | 4 in basement | 4 in basement |
| **OTHER COMMON FACILITIES** | | |
| House lounges | 1 per house, 2-story with balcony | 1 per floor, divisible for seminars, study |
| Kitchenettes | 1 per floor | 1 per floor |
| Main lounge | 2-story with balcony | 1-story |
| Recreation rooms | 1, large | 1, moderate size |
| Ping-pong rooms | 1, moderate size | 1, large |
| Outdoor recreation | none | recreation court |
| Dark room, shop | 1 each, ground floor | 1 each, ground floor |
| Food service | cafeteria | cafeteria |
| Dining rooms | 1 for 450, 1 for 115, 1 for 12 | 7 for 78 |
| Kitchen | 1 in 2-story unit | |
| Snack bar | 1 in 2-story unit | |
| Guest rooms | 9 | 2 |
| Parking | 61-car garage under food service area | |
| **SERVICE AND HOUSEKEEPING AREAS** | | |
| Staff rooms | 1 single room per house | 1 single room per house |
| Conference room | none | 1 |
| Work room | 1 | none |
| Offices | 1 | 2 |
| Main desk, information | on main floor | on main floor |
| Mail | alcove, main floor | alcove, main floor |
| Communications | telephone each room; booths in public areas | as in Terry Hall |
| Housekeeping, linen | ground floor | ground floor |
| Janitors' closets | each floor | each floor |
| Student storage (bulk) | 1 locker each room; storage room on ground floor | as in Terry Hall |
| Laundry: | | |
| Coin-operated machines | 1 room, ground floor | 1 room, ground floor |
| Receiving, laundry and cleaning | 1 room, ground floor | 1 room, ground floor |
| Ironing rooms | 1 per floor | combined with kitchenette |

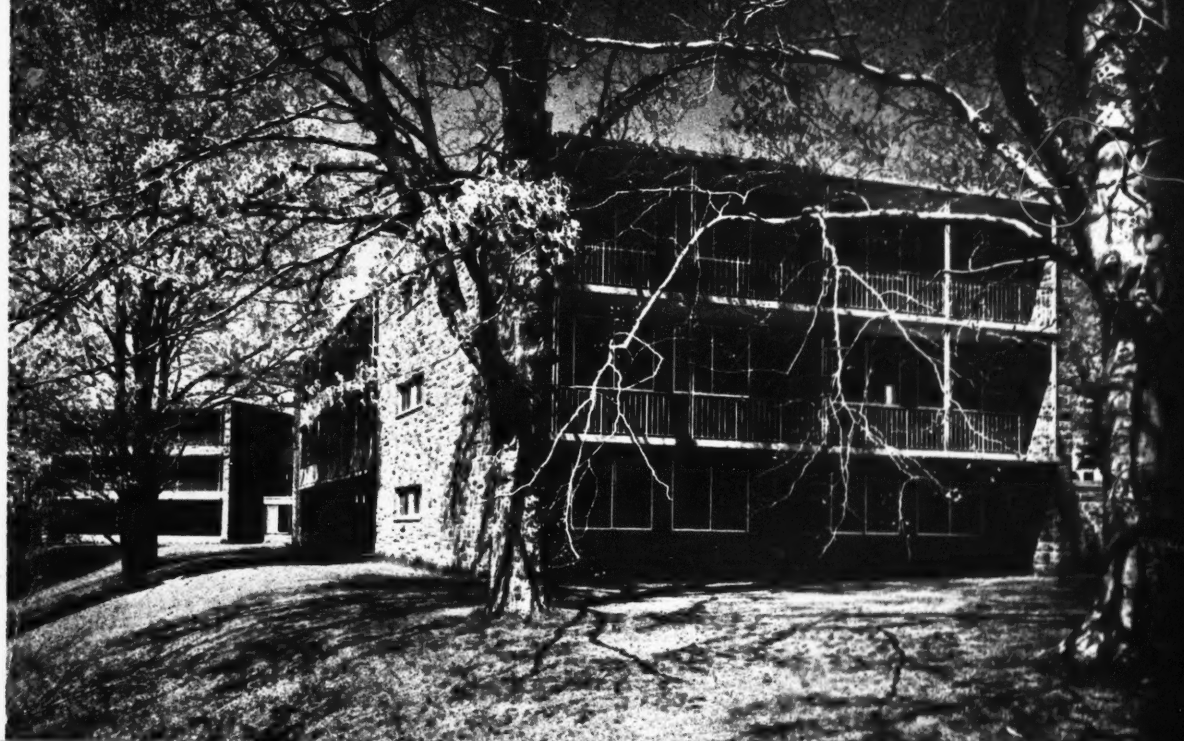
| **SPACE ALLOCATION**<br>Type of Space | Area (Gross Sq. Ft.) | | % of Total Floor Area | | Area per Student (Gross Sq. Ft.) | |
|---|---|---|---|---|---|---|
| | TERRY | LANDER | TERRY | LANDER | TERRY | LANDER |
| Study-Bedroom | 63,307 | 64,430 | 30.9 | 37.5 | 106.8 | 94.9 |
| Lounge-Recreation | 24,934 | 20,814 | 12.2 | 12.1 | 42.0 | 30.6 |
| Toilets-Showers | 9,899 | 7,104 | 4.8 | 4.1 | 16.7 | 10.5 |
| Dining-Kitchen | 21,173 | 11,211 | 10.3 | 6.5 | 35.7 | 16.5 |
| Service-Storage | 27,146 | 18,564 | 13.3 | 10.8 | 45.8 | 27.3 |
| Corridors-Stairs | 33,665 | 30,800 | 16.5 | 17.9 | 56.8 | 45.4 |
| Garage | 22,114 | 17,207 | 10.8 | 10.0 | 37.3 | 25.3 |
| Other | 2,444 | 1,874 | 1.2 | 1.1 | 4.1 | 2.8 |
| TOTALS | 204,682 | 172,004 | 100.0 | 100.0 | 345.2 | 253.3 |

*Although two single rooms were added to each floor in Lander Hall, most student rooms in both halls are well-proportioned doubles like the one below. Built-in desks are lighted by a fluorescent fixture and swivel reading lamp attached to the bookshelves. Sofa-beds pull out from a wall-attached back rest. Closets line the corridor wall*



# RESIDENCES RELAX ON WESLEYAN'S COUNTRY CAMPUS

*The entrance to the Foss Hill residence group is a portico formed by raising the unit nearest the rest of the campus on columns (above). As the photos show, the buildings inside it are carefully blended with the rural landscape, the halls and their connecting lounges rambling lazily over the gently rolling site. All of the halls in the main cluster (see site plan overpage) are two stories high; the three-story halls (right) form another cluster*



*Foss Hill I*

WESLEYAN UNIVERSITY

*Middletown, Connecticut*

*Charles H. Warner, Jr. and*
*Brown, Lawford & Forbes,*
*Architects; Clark & Rapuano,*
*Landscape Architects*

## Wesleyan's Country Campus *(continued)*

IN CONTRAST TO THE MANY urban colleges which are being forced to squeeze in new housing units wherever space is to be had, rural Wesleyan was blessed with a large, rolling, heavily wooded site for its new Foss Hill residence halls. The buildings take full advantage of their pastoral setting, rambling over slopes and around trees, echoing natural materials and contours, and shaping livable outdoor spaces. The result is a relaxed, domestic-scaled living group of which Wesleyan's president writes: "It is hard to conceive of an arrangement of rooms, lounges, and landscape that better contribute to an atmosphere of study and appreciation."

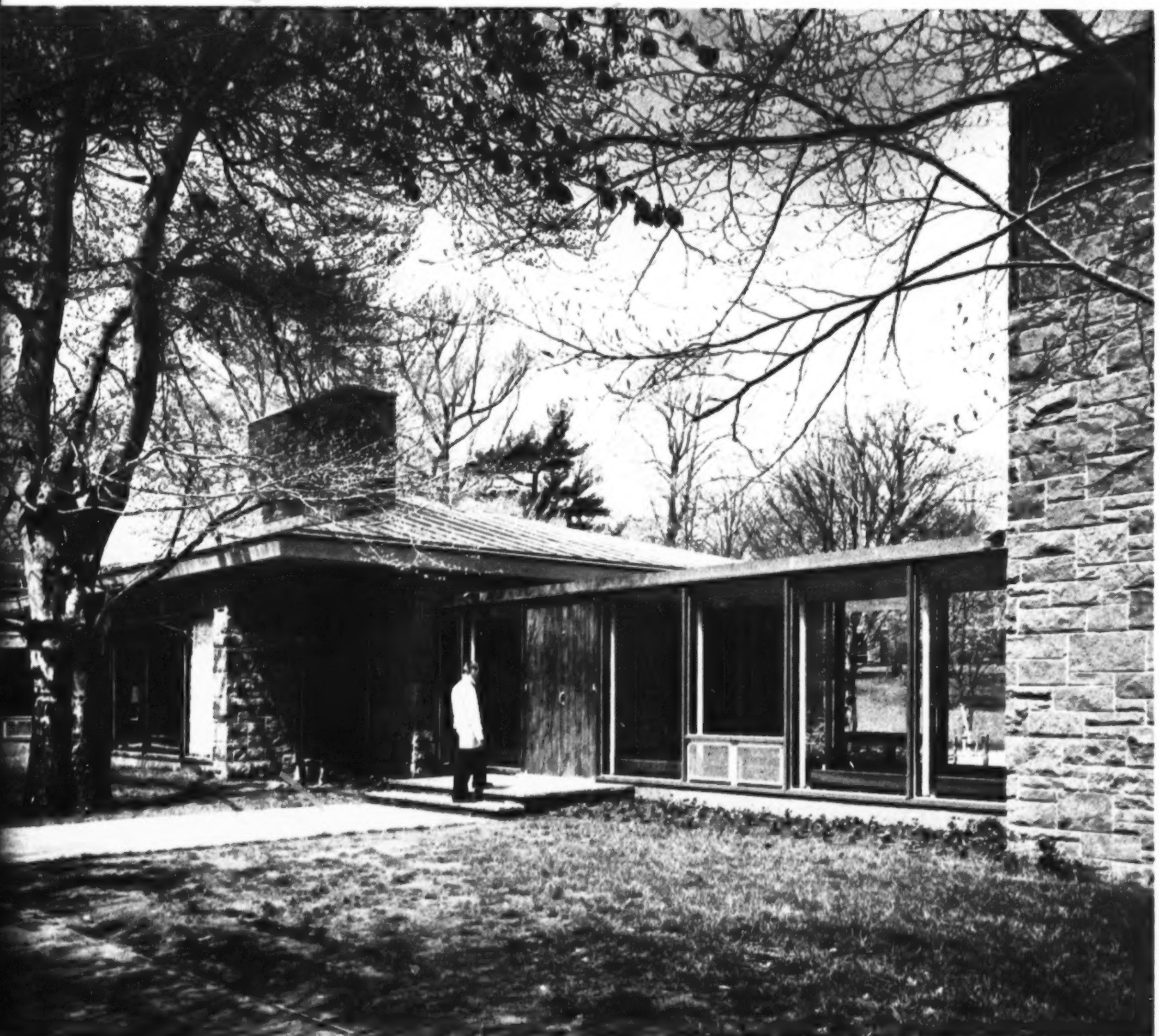
As the site plan shows, the buildings in the Foss Hill group are deployed in two main clusters of two three-story halls and four two story halls. Each pair of halls is supplemented by a separate lounge building which is connected to the two halls by glass-walled links designed to bridge the changes in level. In each lounge, a fireplace wall separates the library-study area from the larger living room with adjoining kitchenette. Other common facilities — game rooms, laundry rooms, and storage— are located in the basements of the residence halls. There is also a snack bar in the basement of Unit 3, and an administrative office on the ground floor of Unit 2, the hall nearest the academic campus.

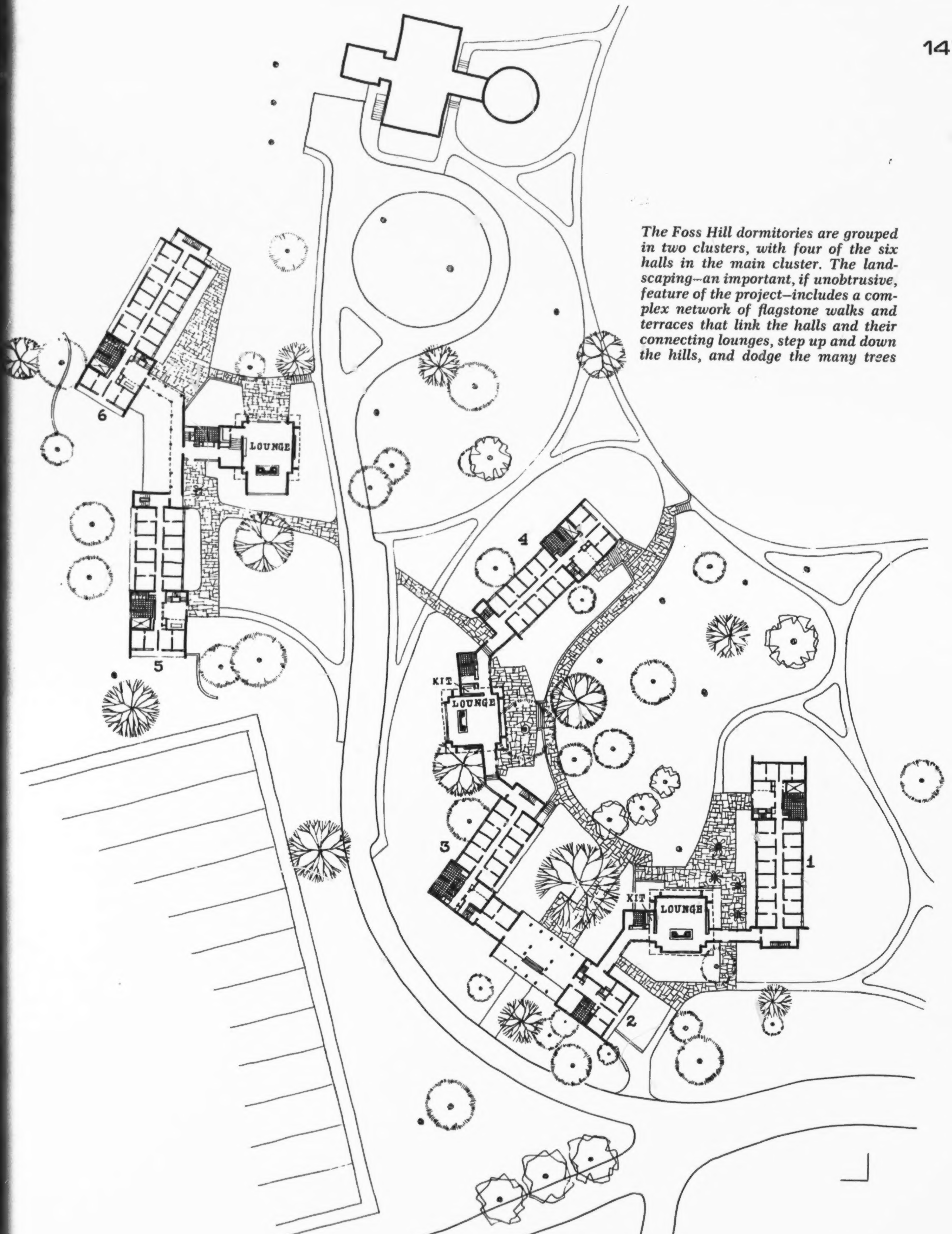
Otherwise, the residence halls are devoted wholly to student rooms arranged along double-loaded corridors. Most of the student rooms are paired in sleeping-study suites shared by two students, but there are also some single rooms and several suites that can be converted to singles. Most rooms have balconies that add to their apparent and actual size.

The generous area per student, and high standards of design and construction are largely responsible for the obvious amenity of the buildings. They are also responsible, at least in part, for the above average cost, although the difficulties of building on a rocky, hilly site also contributed their share. Rock excavation was avoided as much as possible, but the tunnels that carry utilities to the several structures were quite expensive.

In Foss Hill II, a second, similar group of halls now under construction, the area per student is being cut down by such means as eliminating the lobbies in the residence halls and reducing the size of the lounge buildings. This is expected to lower the cost per student to an estimated $7,737, without significantly changing the character of the buildings.

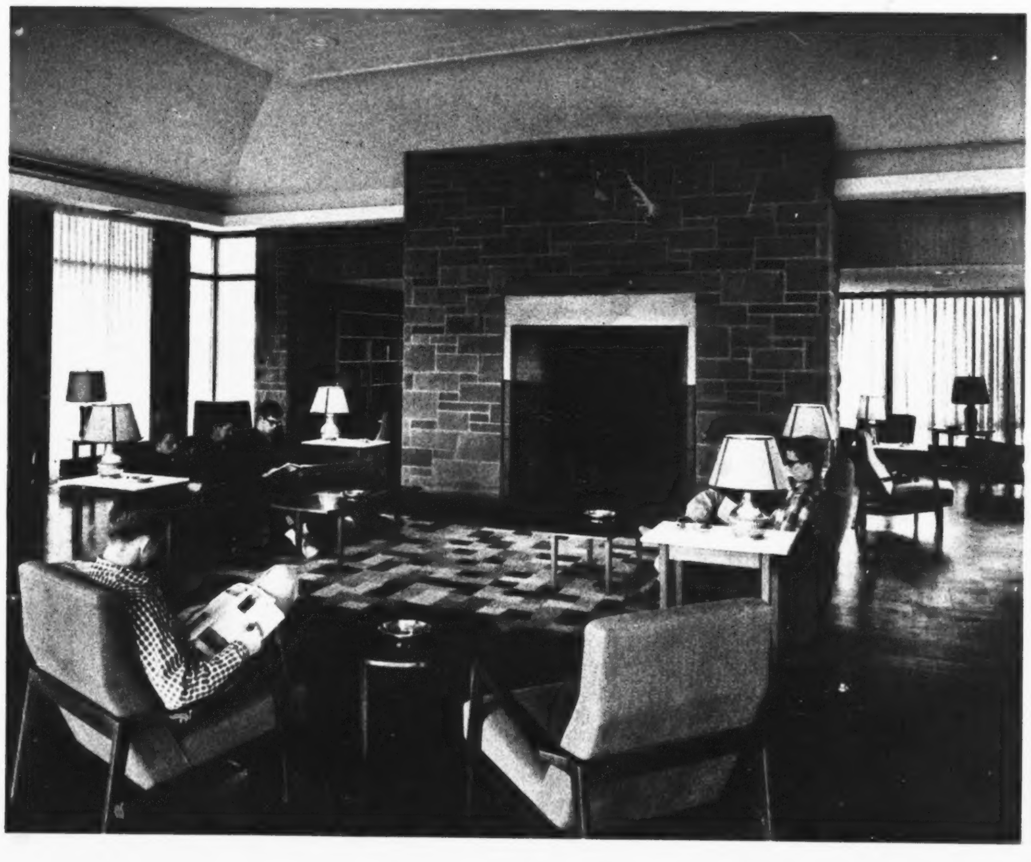
*Separate lounge buildings make it possible to remove most social activities from the residence halls proper*





*The Foss Hill dormitories are grouped in two clusters, with four of the six halls in the main cluster. The landscaping—an important, if unobtrusive, feature of the project—includes a complex network of flagstone walks and terraces that link the halls and their connecting lounges, step up and down the hills, and dodge the many trees*

*The lounge buildings, which combine natural wood and stone with glass, are a uniquely effective blend of openness and intimacy. The focal point of each is a massive stone fireplace that also serves the practical function of separating the library-study from the living room. A small kitchenette is handy for snacks and casual entertaining*



## Wesleyan's Country Campus *(continued)*

**PROJECT SIZE**

| | |
|---|---|
| Number of buildings | 6 residence halls, 3 separate lounge buildings |
| Number of floors | residence halls: 4, 2-story, 2, 3-story; lounges: 1-story |
| Number of students, including student staff | 211 men |
| Total area: | |
| 6 residence halls | 86,046 |
| 1 service tunnel | 1,200 |
| 3 lounge buildings and connecting corridors | 21,080 |
| Total | 108,326 sq. ft. |
| Area per student | |
| Residence halls and tunnel | 413 |
| Lounges | 100 |
| Total | 513 sq. ft. |

**SPACE ALLOCATION**

| Type of Space | Area (Gross Sq. Ft.) | % of Total Floor Area | Area per Student (Gross Sq. Ft.) |
|---|---|---|---|
| Study-Bedroom | 33,000 | 30.4 | 156.4 |
| Lounge-Recreation | 12,000 | 11.1 | 56.8 |
| Toilets-Showers | 8,300 | 7.7 | 39.3 |
| Kitchen | 600 | .6 | 2.8 |
| Service-Laundry | 6,100 | 5.7 | 28.9 |
| Storage | 7,660 | 7.0 | 36.3 |
| Corridors-Stairs | 24,500 | 22.6 | 116.1 |
| Other (mechanical spaces, utility tunnels & balconies) | 16,166 | 14.9 | 76.6 |
| TOTALS | 108,326 | 100.0 | 513.2 |

**PROJECT COSTS**

| | Total, excluding land, furnishings (including built-ins) and architects' fees: | Per Student | Per Square Foot |
|---|---|---|---|
| Residence halls | 1,760,000 | 8,341 | 20.17 |
| Lounges | 517,000 | 2,450 | 24.53 |
| Total | $2,277,000 | $10,791 | $21.02 |

**PLAN ORGANIZATION**—Interconnected groups of four and two residence halls are served by eparate lounge buildings for each two halls.

| | |
|---|---|
| Students per hall | 24 to 50 |
| Per floor | 12 to 20 |
| Per room | 1: rooms paired |
| oom dimensions (per pair) | 14 ft. by 20 ft. plus balconies |
| Bathrooms, community | 1 per floor |

**EDUCATIONAL FACILITIES**

| | |
|---|---|
| Desks and bookshelves | in student rooms |
| Library-study | in each lounge |

**OTHER COMMON FACILITIES**

| | |
|---|---|
| House lounges | 1 in separate building for each pair of residence halls |
| Kitchenettes | in house lounges |
| Recreation areas | game rooms in partial basement each hall, numerous outdoor terraces |
| Food service | elsewhere; snack bar under 1 hall |

**SERVICE AND HOUSEKEEPING AREAS**

| | |
|---|---|
| Staff rooms | director's suite in residence hall nearest academic campus (Unit No. 2); 1 student counselor's room in each hall |
| Administrative office | ground floor, Unit No. 2 |
| Communications | telephone in each student room, booths in residence hall corridors |
| Housekeeping | maid's room and storage in Unit No. 2 |
| Janitors' closets | each floor, halls and lounge buildings |
| Student storage (bulk) | in basements, each hall |
| Laundry rooms | in basements, each pair of halls |

*Most of the student rooms ranged along the halls' double-loaded corridors are paired in two-student suites, with one room used for study (below), the other for sleeping. However, there are also some single rooms (above), and suites can easily be converted to two singles by locking the connecting door. All rooms on the upper floors, and many on the ground floor, have small balconies. For greater flexibility of use, the rooms include no built-in furniture except for wardrobes placed along the corridor walls. Acoustic tile ceilings also help to control noise*

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